ENHANCING THE FACILITIES MANAGEMENT (FM) SERVICE DELIVERY IN MALAYSIA: THE DEVELOPMENT OF PERFORMANCE MEASUREMENT FRAMEWORK (PERFM)

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I, Nik Elyna Myeda, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

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ABSTRACT

Facilities management (FM) is a practice that contributes added value to organisations. An optimum FM service delivery can be achieved by giving more emphasis to the performance measurement (PM) aspect. The significant functions of PM in maximising the efficient productivity of organisations' service delivery have been acknowledged and proven globally. However, there is still a gap in the scope of PM in FM, especially in Malaysia, whereby its concept is still not as well-developed as it is in other industries. There is also a lack of an appropriate set of performance measures that can be used by FM practitioners in the industry. The literature review for this research has also shown that FM industry in Malaysia is still immature and in need of a step forward to be as competitive as other FM industries globally. This has driven this research to endeavour to discover and comprehend the effective key PM elements in measuring FM service performance. This research aimed to develop a framework that proposes appropriate FM performance measures that can be used by organisations in Malaysia. The qualitative methodology approach from the pilot study survey, case studies and interviews has shown significant findings on three levels of analysis. First, there is a gap in the literature about the FM industry in Malaysia, and a greater understanding of the FM service delivery needs to be further addressed and developed. Second, by using a comparison study, this research has demonstrated that the PM designs in the UK are comprehensive, detailed and customer-driven, whereas PM designs in Malaysia are simple and supplier driven, but not objective-oriented. Third, findings from the interviews, which aimed to evaluate the proposed framework, have demonstrated that the developed performance measurement framework (PERFM) in this research embeds positive qualities of an effective PM framework and is suitable to be implemented in FM practice in Malaysia. From the findings of this research, it is strongly anticipated that PERFM would enable the FM practitioners to better understand the FM service scopes and the performance specifications and targets that should be achieved within their capacities. PERFM is also expected to offer values and benefits and serve as a platform in bringing up the FM industry to a whole new level.

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May we always be driven to be the best among all.

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CHAPTER 1: INTRODUCTION

1.1 Overview of the Thesis

This thesis presents a significant contribution to knowledge by exploring the implementation of Performance Measurement (PM) in Facilities Management (FM). It seeks to understand the key elements in measuring FM service performance and to develop a framework that can be used by FM practitioners in Malaysia. This chapter addresses the research scope and problem, research question, research aims and objectives, significant contribution to knowledge, research design, research structure and chapters, and, finally, the research schedule. This first chapter explains how the research was carried based on the root problems to achieve the underlying aim and objectives.

1.2 The research problem

Much FM practice remains cost-focused, rooted in operations and concerned primarily with maintaining the steady-state position of an organisation (Kaya *et al.*, 2004). There is a need for the FM practice to continuously be improved in order to demonstrate the added value to the organisation's directives. One essential approach is determining that the service delivered by service providers is as per the standard and should meet or exceed the clients' expectations. Sarshar and Pitt (2009) believe that there are areas that are more significant for client than for supplier. Therefore, it is the client or organisation's responsibility to understand the service provided and select the appropriate measurement parameters or performance measures by which to effectively measure the service performance. Lack of a conceptual management framework is the reason why FM remains misunderstood in the general business sector (McLennan, 2000). A PM framework can bridge this gap, by proposing the imperative elements in service delivery, which can contribute to the organisation's short- and long-term business planning.

Most research in FM focuses on the role of the corporate real estate function, outsourcing decisions or more general management issues (Kadefors, 2008). Previous studies in performance have tended to measure profitability, economics and environmental issues and, recently, issues on sustainability, but there is a lack of studies that focus on performance purely from the FM perspective (Enoma and

Allen, 2007). Although the area of PM is not new, the constructs are neither well-established nor standardised across and even within FM disciplines, giving an abundant area for investigation. Amaratunga (2000) believes that researchers and writers have yet to investigate the concepts of PM that are well-developed in other fields, and that they currently do not take into account the complexities of PM at the organisational level. In essence, Liyanage and Egbu (2008) also agree that there is a need to develop the framework for all FM services using FM service level agreements and other key performance indicators (KPIs). Most of the studies on measuring FM service performance concentrate on the principles and general indicators but there is a lack of specific parameters that look at both management and operation.

At present, the lack of proper categorisation hampers frequent and widespread use of performance metrics by the industry (Lavy *et al*., 2010). There are also only limited KPIs that can be used in FM as most frameworks propose the performance measures or indicators that are too general for FM service specification (Enoma and Allen, 2007). This shows that there is a big gap in formulating an appropriate set of performance measures that can be used by FM practitioners in the industry.

As for the Malaysian context, there has been little study of FM service performance. The current situation in Malaysia confirms that practices vary from one organisation to another, depending on the services provided or applied to the buildings. The slow pace of regulating appropriate FM standards or regulations is another factor that requires immediate response action (Mustaffa *et al*., 2008).

One major problem faced is the lack of FM service standards that can be used to guide the practitioners to implement and measure FM strategically. As suggested by Amaratunga (2000), there is a need to determine, verify and integrate the axioms of the modern Performance Measurement System (PMS) in the context of FM. Therefore, this research seeks to fill the gap in the Malaysian FM industry by integrating the concept of PM theories and performance elements being practised in the industry through the development of Performance Measurement Framework (PERFM).

1.3 Research questions

Based on the apparent research problems identified from the initial literature review, this study poses the following research questions:

What are the key elements in measuring FM service performance?

How can FM organisations in Malaysia measure their performance strategically, using a practical framework?

1.4 Aim and objectives

Based on the apparent research problems and the research questions posed, this research proposes the following aim:

To develop a PM framework that FM companies in Malaysia can use to implement and enhance service delivery

Therefore, in its first stage it seeks to understand the current knowledge and implementation of PM aspect by FM practitioners both in Malaysia and the UK, in order to introduce a PM framework for FM practice in Malaysia to enhance existing service delivery.

To systematically investigate this aim, four objectives have been derived:

(1) To understand the current thinking on FM and PM globally, with a specific focus on the Malaysian context.
(2) To understand the elements of effective PM both in theory and practice, looking at Malaysian and UK case studies.
(3) To develop PERFM to be used by Malaysian FM practitioners:
    a. Identify the key components of PM, drawing on the key findings from Objectives 1 and 2;
    b. Use knowledge from Objective 2 to obtain the current position of both Malaysian and UK organisations;
    c. Produce PERFM based on findings from Objectives 3a and 3b.
(4) To evaluate PERFM's ability to enable FM practitioners in Malaysia to enhance their existing FM service delivery

1.5 Research Approach

In a Malaysian context, there is a lack of guidelines and framework of strategic FM or performance guidelines to be followed by practitioners. This research aims to overcome the challenges faced by the FM industry in Malaysia by looking at the imperative elements in measuring FM service delivery and developing PERFM as a powerful tool for practitioners to use as a guide to upgrading their practice from operational to strategic FM.

Upon completion, this PERFM should be an integral part of measuring FM service delivery. It is designed to incorporate the following aspects:

- Management- which consists of functional performance measures covering the managerial aspect
- Operation- which consists of technical and image performance measures focusing on operational elements namely hard and soft FM

The performance measures for both management and operation aspects focus on the essential indicators aiming for potential efficiency gains and quality improvement, particularly in the management, operation, customer-focus and outsourcing elements.

The development of this framework will serve as guidance by which Malaysian FM practitioners can strategically measure their FM service delivery based on the robust performance measures proposed in PERFM. This new development being implemented by the practitioners will open a new, challenging experience and lead to a rapid growth of the FM industry in Malaysia.

The novelty of this research is proven by the lack of FM guidelines in Malaysia, particularly for measurement purposes. This research is taking a step forward in developing a master plan to change the FM sector in Malaysia. It is expected that this research will create a lot of interest among academics and practitioners, as it proposes a set of PM framework that has never been developed and researched extensively.

1.6 Research Design

In order to achieve the aims and objectives, this research proposes to adapt the qualitative approach. Three phases of data collection were conducted comprising of pilot study survey, case studies and interviews.

The philosophical worldview adapted in this research is constructivism, where it seeks to understand a specific context in which how the people work in order to understand the work settings of the participants. Based on this worldview philosophy and grounded theory approach, this research adapted the triangulation technique comprises of pilot study survey, case studies and interviews.

The methodology of this research commenced with a pilot study survey, conducted through the distribution of questionnaires to the key FM players in the Malaysian context. The survey gave feedback and findings on the key items of FM and PM in FM, which have been summarised from the literature review. Subsequently, the qualitative approach was undertaken by conducting a series of case study on selected FM organisations in Malaysia and the UK. In-depth study and analysis of the case studies provided overview of the current performance measures being used in Malaysian organisations in comparison to UK organisations, where the FM industry is much more developed.

Further evaluation of the developed PERFM was based on the feedback from the final interviews carried out with the selected FM practitioners from the case study organisations in Malaysia. It is concluded that the objectives of this study were successfully achieved by implementing the selected research methods and tools (as shown in Table 1.1). The primary source of data collection of this study was based on the qualitative approach from both case studies and interviews. The methodology used has successfully achieved the aim of the constructivism approach, which is to inductively generate a theory based on the study of the service settings both from literature studies and data collection.

Research Objectives	*Methodology*
1) To understand the current thinking on FM and PM (theory) globally, with a specific focus on the Malaysian context	✓ Literature Review (theories) ✓ Pilot Study: Questionnaire Survey (practice)
2) To understand the elements of effective PM both in theory and practice: Malaysian and UK case studies	✓ Literature Review (theories) ✓ Case Studies: Malaysian FM Companies (practice) ✓ Case Studies: UK FM Companies (practice)
3) To develop PERFM to be used by Malaysian FM practitioners	
a. Identify the key components of PM, drawing on the key findings from Objectives 1 and 2	✓ Literature Review (theories) ✓ Survey and Case Studies findings (practice)
b. Use knowledge from Objective 2 to obtain the current position of both Malaysian and UK organisations.	✓ Data Analysis from Case Studies
c. Produce PERFM based on findings from Objectives 3a and 3b	✓ Literature Review ✓ Data Analysis Findings
(5) To evaluate PERFM's ability to enable FM practitioners in Malaysia to enhance their existing FM service delivery	✓ Interviews with Malaysian FM practitioners ✓ Data Analysis Findings

Table 1.1: Proposed research methods

1.7 Proposed Research Structure

This study comprises ten chapters; the complete workflow of the proposed research structure, which provides a brief summary of each chapter, is shown in Table 1.2.

Research Chapters	Content Summary
Chapter 1	***Introduction*** This chapter introduces the research aim and the objectives of the research based on the research problem. It also outlines the methodology used and the time schedule adhered to in completing the research.
Chapter 2	***Introduction to Facilities Management (FM)*** This chapter covers the FM literature pertaining to its discipline, stimulating growth factors, level of maturity and FM development in the Malaysian context.
Chapter 3	***Performance Measurement (PM): Key Elements and Service Delivery*** The third chapter highlights the key elements in PM including the development of an effective Performance Measurement System (PMS) and also the need to implement the system. It also looks at the different approaches and principles in the research conducted by previous studies.
Chapter 4	***Performance Measurement (PM) in Facilities Management (FM)*** This chapter focuses on the literature of PM in FM, particularly looking at how PM has been researched in the FM practice and also the significance of its implementation. Previous studies focusing on the performance elements or indicators are compiled and the imperative elements are reviewed.
Chapter 5	***Development of a Performance Measurement (PM) Framework*** The chapter covers the literature pertaining the imperative elements to develop a PM framework. It also outlines the steps taken and principles considered in developing PERFM. The rationale and processes involved are also explained. The background of pilot study questionnaire survey and the analysis findings are presented to further justify the exploration of the research scopes and development of PERFM.

Chapter 6	***Research Methodology*** The methodology chapter introduces the literature on the methodology elements including philosophical worldview, strategies of inquiry, data collection method, and data analysis, and relates how these elements are incorporated into this study's research methodology design or framework.
Chapter 7	***Case Studies Data Analysis*** The second analysis chapter introduces the analysis of the case studies across different sectors and regions. There is also a comparison of the FM service system and PM designs and approaches being used by all the case study organisations
Chapter 8	***Introduction of PERFM*** This chapter introduces PERFM and the proposed set of performance measures for both management and operation aspects. The specific performance measures are also paired with their respective performance formula or target and monitoring methods.
Chapter 9	***Interviews Data Analysis*** This final level of analysis looks at the feedback from the interviews with the FM practitioners from the Malaysian case study organisations regarding the proposed PERFM.
Chapter 10	***Conclusions and Recommendations*** The final chapter summarises the research objectives and conclusions and also proposes the recommendations for further study. The contribution of knowledge from this study is also proposed in the last section of this chapter.

Table 1.2: Outline of research chapters

The coordination of the research aim, objectives and all the research chapters is illustrated in Figure 1.1.

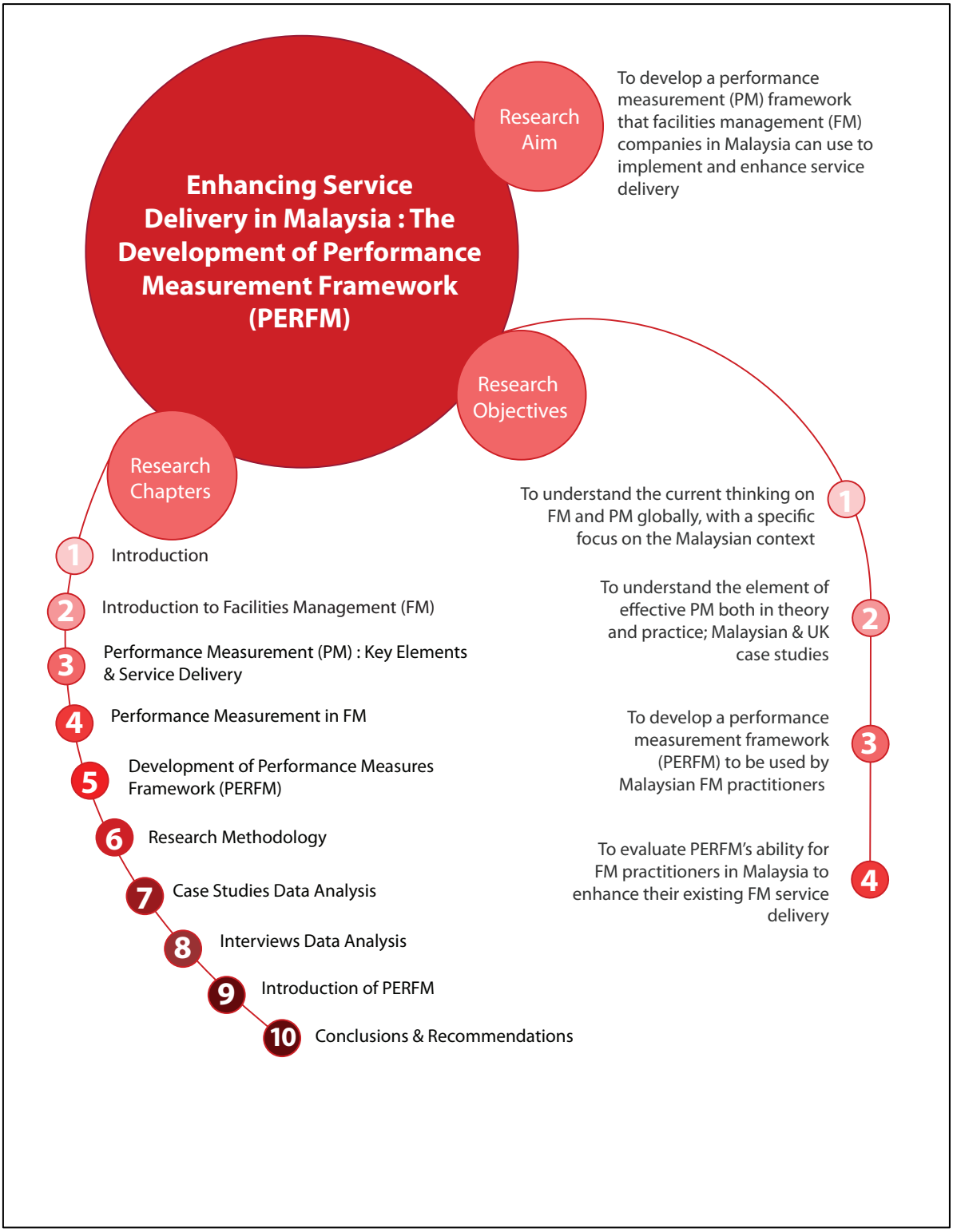


Figure 1.1: Research Schedule

1.8 Proposed Research Schedule

The complete research schedule for this study, complete with the milestones, is shown in Figure 1.2.

TASKS	START	END	NOV 09- NOV 10	DEC 10 – NOV 11	DEC 11 –NOV 12	DEC 12 – MAY 13
1.0 INTRODUCTION & LITERATURE REVIEW	**26/11/09**	**01/02/13**				
1.1 Research Background	26/11/09	25/07/10				
1.2 Facilities Management (FM)	26/07/10	01/02/13				
1.3 Performance Measurement (PM)	26/07/10	01/02/13				
1.4 Development of a PM Framework	26/07/10	01/02/13				
2.0 RESEARCH DESIGN & METHODOLOGY	**26/12/10**	**26/12/12**				
2.1 Research Design	26/12/10	26/12/12				
2.2 Research Methodology	26/12/10	26/12/12				
2.3 Research Tools	26/12/10	26/12/12				
2.4 Analysis Method	26/12/10	26/12/12				
3.0 SURVEY (PILOT STUDY) & MPHIL/PHD UPGRADE	**26/11/10**	**10/02/11**				
3.1 Pilot Study (Online Survey)	09/12/10	15/12/10				
3.2 Analysis of Pilot Study Results	16/12/10	30/01/11				
3.3 Upgrade MPhil/ PhD	10/02/11	10/02/11				
4.0 CASE STUDY 1	**10/07/11**	**30/01/12**				
4.1 Malaysian organisations	10/07/11	19/10/11				
4.2 Analysis of Case Study Results	20/10/11	30/01/12				
5.0 CASE STUDY 2	**10/02/12**	**01/07/12**				
5.1 UK organisations	10/02/12	28/05/12				
5.2 Analysis of Case Study Results	28/05/12	01/08/12				
6.0 INTERVIEWS	**15/08/12**	**10/02/13**				
6.1 Conduct Interviews	15/08/12	20/09/12				
6.2 Analysis of findings	21/09/12	10/10/12				
7.0 FINAL WORK	01/10/12	20/12/12				
7.1 Summarise all chapters	01/10/12	20/12/12				
7.2 Conclusions and recommendations	01/10/12	20/12/12				
8.0 PROOFREADING & SUBMISSION	**28/12/12**	**13/02/13**				
9.0 VIVA	**17/04/13**	**17/04/13**				

Figure 1.2: Research schedule

1.9 Research Summary

Based from the introduction of the overall research structure and design in chapter 1, a further exploration of the literature pertaining FM is covered in chapter 2. The literature studies of FM in the next chapter will give an overview of the whole concept of FM in general, and Malaysia in specific. This would give a good understanding of the FM literature in order for this study to move forward in investigating the philosophies and theories of the FM implementation and scope of service delivery.

CHAPTER 2: INTRODUCTION TO FACILITIES MANAGEMENT (FM)

This chapter discusses how FM is being regarded as a business support role and how it contributes to the overall organisation's success. It also looks at many other imperative elements of FM, namely, its evolution, strategic delivery, responsibilities of FM managers, and also the scopes and level of FM services that have been implemented in the industry. The development and growth of FM is also explained to give an overview of how the FM practice has since progressed. This chapter also focuses on the FM industry in Malaysia by looking at the factors and aspects that contribute to its growth and development in that region, as well as the opportunities, demands and challenges of the FM industry to progress further in that region.

2.1 Introduction

The main function and focus of FM is to manage the changes that are taking place in the relationship between organisations, their employees and their facilities (Grimshaw, 1999). As introduced by Barret (1995), based on its three levels of operation (that is, strategic, tactical and operational), three main areas of FM are premises' services, office services and central services. These activities can vary between advising and policy making on one side and managing and executing operations on the other.

FM covers an extremely wide field of activity (Nutt, 1999). It includes the physical issues of built space, services, technology, maintenance, modification and adaptation; the human and business concerns of facility purpose, function and use, security, safety, comfort, and environmental health; and financial issues of property investment, asset value, and the costs and benefits of occupancy. Today, the scope of FM has diversified and now also covers real estate management, financial management, change management, human resources management, and health and safety contract management. Most significantly, it covers the management structures, operations and procedures that serve to integrate decisions across the physical, human and financial areas of concern, all for the improved use, performance and productivity of facilities in all sectors. Just over a decade ago, Then (1999) described FM as a hybrid management discipline that combines people, property and process management expertise to provide vital services in support of the organisation. It has also been seen as a resource management at

strategic and operational levels of support (Nutt, 2000). However, it has also been suggested that it should be considered from the strategic view instead of from an operational view (Then, 1999).

Barret (2000) relates the role of FM in delivering a high level of operational support to the core business and providing an improved strategic context so that effectiveness as well as efficiency is achieved. He also claims that there is an absence of process to link core business and FM strategies. According to Best *et al*. (2003), FM is a dynamic and growing area. It is about empowering people through provision of infrastructure that adds value to the processes that they support (Smith, 2003).

FM is also perceived to contribute significantly within the community context (Roberts; 2004, Alexander and Brown, 2006). Atkins and Brooks (2005) also positions FM in the strategic business discipline. More recently, the definition of FM has been diversified, allowing it to be recognised and understood from various perspectives. According to Atkin and Brooks (2006), there are two perspectives on managing facilities: the short-term perspective, that is, to consider what must be done to maintain current services; and the long-term perspective, which considers the future potential changes of the organisation and how this will impact upon the services required. The latter employs strategies in managing FM by integrating both existing facilities' provision and forecast requirements.

Pitt and Tucker (2008) define FM as the integration and alignment of the non-core services - including those relating to premises - required to operate and maintain a business in order to fully support the core objectives of the organisation. Instead of focusing FM on traditional FM, that is, mainly on reactive maintenance, no measurement and management of PM and not considering FM innovations, FM should be applied from a strategic approach where the function is seen to be able to add value to organisations by implementing all the strategic approaches and models available. This is supported by Tucker and Pitt (2009), who argue that FM should be viewed strategically, where the integration and alignment of non-core services required to operate and maintain a business fully support its core objectives. An example of another strategic approach is the position and priority given to the people – in particular the customers and end users as the centre of a service delivery in FM(Tucker and Pitt, 2010). Larsen (2011) signifies the role of FM in

cultivating creative working environments within a community. This has shown a new dimension of FM perceptions among the practitioners and the society,

Two leading international professional bodies of FM, namely the International Facility of Management Associations (IFMA) and the British Institute of Facilities Management (BIFM), representing a well-developed FM in their respective countries, have similar definitions of FM:

FM is a profession that encompasses multiple disciplines to ensure functionality of the built environment by integrating people, place, process and technology (IFMA, 2012).

FM is the integration of processes within an organisation to maintain and develop the agreed services, which support and improve the effectiveness of its primary activities (BIFM, 2012).

The IFMA (2012) views FM as having an holistic nature regarding the various disciplines and interdependence of multiple factors in its success, while the BIFM (2012) promotes the development of FM as a critical, professional and strategic business discipline. This suggests that FM is a profession that is comprised of multiple areas and integration of people, place, process and technology to achieve the agreed service needed to ensure the functionality and effectiveness of the activities in the built environment.

Therefore, FM can be perceived as a fundamental aspect in business, which links its strategic approach with the organisation's objectives or missions. An effective practice can be achieved through strategised processes in delivering values and benefits for both short- and long-term targets and achievements. The processes involved for each aspect within its scope of services must be prioritised and measured accordingly to determine an outcome in a form of a good and healthy working environment to the customers. The roles of FM is not limited to only business and organisations, but also to offer values and harmony to the social community and built environment.

2.2 FM Growth and Development

FM has established itself as a key service sector, with a diverse and highly competitive market of FM contractors, in-house FM teams, FM vendors, FM consultants and professional FM institutions (Nutt, 1999; Tay and Ooi, 2001). The BIFM (2007) has suggested a number of factors that could stimulate the FM growth. Global competition is one of them, where there is a need to maintain a healthy competition in delivering quality services to the public. Another factor is the high cost of space, which is caused by the rising cost of occupying, servicing and maintaining space. This has also resulted in limitations and cost constraints in FM services. The rising expectations from clients and building occupiers are also the driving force behind FM in prioritising the service elements. FM also seeks to use the rapid development in information technology in a variety of ways, e.g., to delegate service tasks and to communicate with users. Most important of all, the relationship between the clients, the users and the FM team is crucial in supporting the growth and development of FM. The FM role in supporting an organisation's core business objectives must be shown, including how FM deals with the demand and supply relationship and the various levels of possible interaction that FM can offer. It encompasses multiple activities under various disciplines and combined resources, which can contribute to the organisation's success (Mohd-Noor and Pitt, 2009a).

One of the significant ways that FM can support the organisation's direction is through its role in creating value. Jensen (2010) also signifies the positive change of FM direction towards creating added value. A number of models have been developed to facilitate the process and concept of added values. The FM Value Map by Jensen (2010) for example, aims to demonstrate the various different ways that FM can offer the added values to the practitioners. It proposes how the resources can benefit the stakeholders- society, customers, staff and owners through the impacts or outcomes from both processes and provisions. The development of various models in the value creation aspect signifies an impressive initiative in creating innovative and advance tools for the practitioners. This way, the clients will be able to comprehend the values that FM service can offer.

FM is also developing in giving more efforts to the community. FM is perceived in a different perspective within the context of an urbanised FM (Roberts, 2004; Alexander and Brown, 2006). This perspective looks into FM approach outside its traditional practical and theoretical dominion focusing on business imperative,

organizational context, workplace setting and service delivery. In 2004, Roberts had introduced the concept of urban FM towards the future of FM alignment particularly looking at the opportunities between FM and the management of public infrastructure and the related services. The opportunity for FM to develop is also demonstrated by Roberts (2004) where he believed that the dominance of the business imperative and shareholder value would be balanced in the future by the realignment of FM with the public interest. Mohd-Tobi *et al*. (2013) also studied the focus of urban FM in managing the community facilities within the context of FM, where urban FM is seen as a platform for the future innovations in delivering benefits and values to the community. The introduction of an urban FM approach also has changed the traditional focus of FM towards the long-term presence of built assets in a community (Alexander and brown, 2006).

2.3 Revolution in FM

FM is one of the main cost-cutting initiatives of the 1970s and 1980s when organisations began to outsource their core services (BIFM, 2012; Mohd-Noor and Pitt, 2009a). In the last three decades, FM has established itself as a key service sector, with a diverse and highly competitive market of FM contractors, in-house FM teams, FM vendors, FM consultants and professional FM institutions (Nutt, 1999; Tay and Ooi, 2001). FM was traditionally viewed as the poor relation between the real estate and construction professions, often conjuring images of maintenance plants, caretaking and cleaning (Atkins and Brooks, 2000). Becker (1990) believes that FM encompasses all areas of an organisation's activities and can be seen as a series of linked activities involving the co-ordination of all efforts relating to the planning, designing and managing of an organisation's physical resources. Then (1990) contradicts Becker's perception that FM mainly covers the physical equipment of the building as he believes that the practice is concerned with the delivery of an enabling workplace environment, the optimum functional space that supports the business processes and human resources.

The success of FM at a corporate level can be seen in how it contributes to the delivery of strategic and operational objectives on a day-to-day basis (Mohd-Noor and Pitt, 2009a). Its scope of discipline covers all aspects of property, space, environment control, health and safety, and support services (Alexander, 1999). More often than not, the FM remit is interpreted as maintenance management, space management and accommodation standards; project management for new-

build and alterations to the general premises; management of the building stock and the administration of associated support services (Hinks and McNay, 1999). From another perspective, FM is also seen as a management of cost-efficiency rather than a method by which to achieve multi-dimensional enhancement of business competitiveness. Many still view FM in collective terms, which lumps together all building facilities and services within the organisation. It becomes a non-core department, supporting services and, more importantly, the innovation that can be brought about by improving the management of services (Pitt and Hinks, 2001). However, FM is not just about delivering services in the most effective ways, it is also about providing them in an ever-evolving world/industry (Mohd-Noor and Pitt, 2009b).

2.4 FM in a Business Context

In relating FM to the business context, McLennan (2000) believes that FM stands in a potentially powerful position because it has the knowledge of physical facilities' performance with the knowledge of business objectives, operations and support services. A study by Sarshar and Pitt (2009) shows that the reviewed organisations do not have FM strategies but they do have clear business directions. The key role of FM is often overlooked in the organisation planning. Alexander (2003) believes that FM fits very well into the overall business agenda as it identifies the influences for change in the business environment and also develops facilities to accommodate it. Myeda and Pitt (2013) promote the significance of FM in supporting a business operation. FM is also a key function in managing facility resources, support services and working environment to support the core business of the organisation in both the long- and short-term (Chotipanich, 2004). For many organisations, the effectiveness and behaviour patterns of the workforce and the effectiveness of their information technology and communication systems are of considerable importance, and the profession of FM continues to evolve to reflect this (Atkin and Brooks, 2005).

According to McLennan (2004), business sector is a key factor determining the criticality of facilities to core operations. He also suggests that FM practice should be tailored to meet the particular needs of the specific business sector. Hallam in Kamaruzzaman and Zawawi (2010) declares that successful FM teams will be able to embrace the language of the core organisations they serve by clarifying the strategic contribution in terms of business-relevant outcomes. Kaya *et al.* (2004)

suggest that FM be reframed as business projects in order to involve the participation of senior management.

Lehtonen (2006) declares that, for most organisations, facility services are support activities without significant strategic importance. Based on the findings of his study, the success factors of collaborative relationship facilities services seem to be quite similar to the success factors of more strategic models in other industries (refer to Figure 2.1). A collaborative relationship in this context can be seen as a collaborative effort from all departments or sectors involved in a business. All identified attributes and success factors are mainly concerned with the teamwork effort from different organisational levels having mutually agreed goals to sustain a good performance and to incorporate all necessary involvement in the development and planning phase.

Attributes	***Success factors***
Commitment	• Ability to meet performance expectations
Continuous development	• Clearly defined and mutually agreed goals
Involvement of different organisational levels	• Joint problem solving
Mutual trust	• Mutual involvement in development and planning
Openness	• Two-way information sharing • Promise of mutual benefits

Figure 2.1: Attributes and success factors of a collaborative relationship in the facility services context
(*Source: Lehtonen, 2006*)

Recognising the importance of collaborative work among the business departments also opens up the opportunity for the organisation to look into the perspective from various angles, technical and operational, and also takes into account the customers' perspective. In the business organisation, senior management identify their customers' core values and set procurement strategies to respond to business needs. Middle management design and streamline the operational processes, while customers benefit from the service delivery. It is important for the service delivery providers to engage with the customers at different levels of the organisation, in order to capture a holistic set of customer requirements. Clients want innovations

that not only do not cost them but that potentially reduce their FM operation cost (Sarshar and Pitt, 2009).

2.5 Scope of FM Services

It is important to clarify the distinctive features of FM and focus on its specific roles in managing resources, environments and services to provide logistics support to the operations of organisations and also contribute to the success of the core business (Nut, 1999). Many organisations have re-evaluated the contributions of FM to making a business successful, recognising the business consequences of poorly-managed facilities and searching for value that can be added through effective planning and management (Alexander, 1996). High profile events such as the British Institute of Facilities Management (BIFM) Annual Awards for Innovation reflect a growing recognition of innovation in the FM sector (Cardellino and Finch, 2006).

There are mainly two types of FM services, namely hard and soft FM. These are the services required to support the operation of the service asset (Scottish Government, 2005). Hard FM relates to the services intended for the actual fabric and building systems and might also be considered to incorporate the more traditional FM services (IFMA, 2012). The scope for respective service is introduced by the IFMA (2012) and BIFM (2012) as follows:

(i) Hard FM services include maintenance of buildings, engineering, air-conditioning system, electrical system, plumbing system, fire-fighting and fire prevention system, security system, building control system, building management system and building fabric works.

(ii) Soft FM focuses on the maintenance of catering, cleaning, health and safety, landscaping and internal plants, security, pest control, handyman, waste disposal and some other support services.

The IFMA (2012) also introduces another Additional Services category for other services, namely printing, reception services, information systems, space planning, and management services such as business risk assessment, business continuity planning, benchmarking, performance management and also contract procurement. There is also an overlap of services by IFMA in the Additional Services category, which some companies categorise as soft FM.

FM services are positioned differently in every organisation and sector. As FM involves a number of disciplines and services, each organisation and body categorises the service scopes of FM in different categories and elements. This study also looks at six examples of how the FM service is categorised differently, as shown in Figure 2.3.

For example, in 1990, Thomson introduced the four generic departments that he believed constitute FM: real estate and building construction, landlord activities, building operations and maintenance, and facility planning. The categories introduce the different scope of FM services, distinctively ranging from works involving real estate and construction, lettings, maintenance and also the strategic FM planning. Barret (1995) has suggested that FM services are divided into three areas: premises, office services and central services. Service scope that is dedicated for a premise is both hard and soft FM; mailing, stationery and office works for office services; and finally, catering, room booking, insurance and archival for central services. Barret's categorisation is targeted mainly at the hard and soft FM only and not on any strategic approach such as management or corporate planning standards. Jones (1996) also incorporates mainly the hard and soft FM service elements in his definition of FM service scope. However, he also emphasises the strategic consultancy elements as well as two services that were not mentioned by the previous authors: information technology and manpower.

Similarly, Moore and Finch (2004) also include the information technology aspect in their proposed FM departments. Although the sub-services for each department are not specified, Moore and Finch's (2004) list of departments is broader and includes IT management, real estate, outsourcing, maintenance, space management, environment or health safety, and property management. Another expansive classification was also introduced by Chotipanich in 2004. The nine service scopes included are real estate and property management, facility project management, maintenance and repairs, building services and operations, office services, planning and programming, space planning and management, operations administration or management, and employee supports and services. The work of these authors indicates that FM scopes have diversified and are getting broader.

The BIFM (2007) has also developed a set of FM scope of services based on Alexander's (1997) list of three FM components that are premises, support services

and information services. The categories are more comprehensive and the proposed sub-services for respective components are precise. The BIFM's classification also gives a holistic view of how FM services support an organisation's business process. The diversity of service scopes indicates how FM service objectives can fit into the overall business success and strategies and provide the added value.

The BIFM (2007) further emphasises the function of FM in providing the support essential to its core business operation through:

- Interaction between the core business, the support functions and the facilities throughout all sections of industry, commerce and service.
- Property strategy, space management and communications infrastructure to building maintenance, administration and contract management
- Business support services together with associated human resources and buildings, e.g. systems, plant, IT, equipment, fittings and furniture
- Management support in primary activities of an organisation. This deals with the demand and supply relationship and presents the different levels of possible FM interaction

FM plays a supporting role in enhancing the performance of a firm and is applicable to all organisations since it relates to the uses of space in a workplace. Tay and Ooi (2001) believe that an integrated approach is required when employing FM practices.

It can be seen that the scopes of FM services perceived by the authors vary differently. Most importantly, the scope has diversified, allowing various aspects and elements to be considered in managing FM service. The scope is not only limited to the daily operation elements but also the strategic aspects namely the planning, consultancy and project management. In general, the scope of FM services focuses on the functional, technical and image aspects that are from both management and operations components. These components cover the aspects pertaining to people, process and property to ensure that the services are addressed and delivered accordingly. The key aspect of the FM service revolves around the total management of the services in order to ascertain a quality service delivered to the clients and customers.

Thomson (1990)

(1) Real Estate and Building Construction
- New building design and construction management
- Acquisition and disposal of sites and buildings
- Negotiation and management of leases
- Advice on property investment
- Control of capital budget

(2) Landlord Activities
- Assignment and sub-letting
- Promotion/ Market support

(3) Building Operations and Maintenance
- Run and maintain plant
- Maintain building fabric
- Manage and undertake adaptation
- Energy management
- Security
- Voice and Data Communication
- Control Operating Budget
- Monitor Performance
- Supervise cleaning and decoration

(4) Facility Planning
- Strategic space planning
- Set corporate planning standards and guidelines
- Identify user needs
- Space planning (furniture layouts)
- Monitor space use
- Select and control use of furniture
- Define performance measures
- Computer aided facility management (CAFM

Barret (1995)

(1) Premises
- Building Maintenance
- Decoration Work
- Sub-contractors
- Telecommunication
- Security
- Safety
- Cleaning

(2) Office Services
- Mailing
- Stationery
- Photocopying
- Vehicles
- Printing

(3) Central Services
- Catering
- Room booking
- Insurance
- Archival

Jones (1996)

(1) Strategic Consultancy
- Space and designs studies
- Acquisition and disposals
- Refurbishment
- Relocation planning
- Budgetary control

(2) Specialist Support
- Security
- Catering

(3) Cleaning
- Internal
- External

(4) Maintenance services
- MandE Services
- Structure and Fabric

(5) General Services
- Copying
- Mail
- Messengers
- Transport
- Portering

(6) Information Technology
- System purchasing
- Systems operations
- Telecommunications

7) Manpower
- Training and Development
- Business Travel

Moore and Finch (2004)

(1) IT Management
(2) Real Estate
(3) Outsourcing (support services)
(4) Maintenance (planned maintenance, IT etc)
(5) Space Management
(6) Environment/ health safety
(7) Property Management

Chotipanich (2004)

(1) Real Estate and Property Management
(2) Facility Project Management
(3) Maintenance and Repairs
(4) Building Services and Operations
(5) Office Services
(6) Planning and Programming
(7) Space Planning and Management
(8) Operations Administration/ Management
(9) Employee supports and Services

BIFM (2007)

PREMISES

(1) Real Estate
- Property Asset Management
- Site Selection
- Relocation
- Lease Management
- Acquisition
- Disposal

(2) *Space*
- Volumetrics
- Churn Planning
- Furniture Layout
- Partition Layout
- Space Utilisation
- Juxtaposition of units and functions

(3) Maintenance
- Structure and Fabric Maintenance
- Service Maintenance
- Finishes Maintenance
- External Areas Maintenance
- Energy Management
- IT Infrastructure
- Telecommunications Infrastructure
- Security Infrastructure

SUPPORT SERVICES
- Mail Services
- Vehicle Fleet
- Catering
- Reception
- Housekeeping
- Office Administration
- Furniture
- Refuse Disposal
- Reprographics
- Security
- Stationery
- Travel
- Vending
- Document Management

INFORMATION SERVICES
- Data Network
- Systems Integration
- Voice and data network
- Network Management
- Wiring Installation
- Planning and Design Studies
- Software Development

Figure 2.2: The scopes of FM services

2.6 The Evolution of FM

Alexander (2003) claims that FM emerged over the last couple of decades as a response to the business environment and the recession in the 1980s and early 1990s. After reaching the UK in 1983 and Japan in 1985, FM went global during the 1990s, becoming more diverse as it did so (Price, 2002). FM is one of the fastest-growing professions in the UK (Mohd-Noor and Pitt, 2009a). According to Best *et al.* (2003), FM is emerging as a discipline in its own right and it embraces more than operational concerns of plumbing and lighting, and even more than the provision and maintenance of a productive and comfortable work environment. Increasingly, the focus is more on the strategic management of facilities, with a broader range of FM responsibilities and scope of work.

The FM field is highly developed and widely practised by property developers and companies in the West. There is a stark contrast in FM practice between Western countries and Asian countries (Mustaffa *et al*, 2008). However, some countries like Japan, Australia, New Zealand, Hong Kong and Singapore have shown a positive growth in the FM field. FM is recognised in these countries as an activity that can achieve more effective management of the buildings, services and associated workforce, in support of the strategic objectives of an organisation (Kamaruzzaman and Zawawi, 2010). There is a significant difference between FM development in Asian countries like Japan, Hong Kong, Taiwan, South Korea, Singapore and Malaysia. Japan first embarked on introducing an integrated FM system by using the automated mechanisation: Nippon Telegraph and Telephone Corporation. Japan sees FM as an important area in business and the techniques of FM are increasingly used. Hong Kong started implementing FM in 1994 and, to-date, the industry has gone from strength to strength, gaining more professional members and organising successful annual conferences.

The whole area of FM is quite well-developed, with the growth in the professional FM sector being matched and complemented by research and education. The growth is encouraged by the fact that Hong Kong has been a place where East meets West and has a multi-cultural background. On the other hand, Taiwan shows smaller growth than Japan and Hong Kong but is slowly improving, based on the increasing number of IFMA memberships. FM in South Korea is developing at a slower pace than some of its competitors in the region. This was indicated in a survey in 2007 by the Ministry of Industry and Trade, which showed that only 2.7%

of the respondents were familiar with the concepts of FM. Despite this low number, multi-national companies like Samsung, Hewlett Packard and IBM Korea have used international FM consultants in their business organisations in South Korea (Mustaffa *et al*., 2008). From an education perspective, the well-attended Asian FM conferences signify a growing interest in FM among the Asian countries

The development of FM in Asian countries like Hong Kong, Malaysia and Singapore is based on three areas, namely practice, research and education (Mustaffa *et al*., 2008). A survey of these countries by Moore and Finch (2004) shows clear signs of progress in Hong Kong and Singapore and mixed signals in Malaysia, concluded by the little evidence of real tangible and visible progress in the field. The study shows that a general lack of understanding and progress are the key drivers that hamper the development of FM in Malaysia. It is also anticipated that the lack of attention given to environmental issues in South-East Asia impedes organisations practising FM from achieving efficiency.

2.7 Delivering FM strategically

Over the last 10-15 years, FM in both the private and public sectors has been evolving from a discipline historically focused on individual buildings to one focused on the total performance of a portfolio of buildings in support of an organisation's overall mission (Cable and Davis, 2004). It is also seen as a management of cost-efficiency rather than a method to achieve multi-dimensional enhancement of business competitiveness. However, FM is not just about delivering services in the most effective ways, it is also about providing them within an ever-evolving world and industry (Mohd-Noor and Pitt, 2009a). FM has always been acknowledged for facilitating organisation's performance (Amaratunga and Baldry, 2000). High profile events such as the British Institute of Facilities Management (BIFM) Annual Awards for Innovation reflect a growing recognition of innovation in the FM sector (Cardellino and Finch, 2006).

Strategic FM is the way forward for every organisation to add their service value (Myeda, 2012). FM deals with the management of built assets and incorporates the control of services necessary for an organisation's successful business operations (Lavy *et al*., 2010). It is concerned with the delivery of an enabling workplace environment, the optimum functional space that supports the business processes and human resources, and is not mainly concerned with the physical equipment of the building (Then, 1999). More often than not, the FM remit is interpreted as maintenance management, space management and accommodation standards, project management for new-build and alterations of the general premises, management of the building stock, and the administration of associated support services (Hinks and McNay, 1999).

FM should be applied from a strategic approach where the function is seen to be able to add value to the organisations by implementing all the strategic approaches and models available. The contribution of FM can be seen in the integration and alignment of non-core services required to operate and maintain a business, and also to fully support its core objectives (Tucker and Pitt, 2009).

The delivery of an FM service is based on two levels of strategic objective (Nutt, 2000). At the national level, the strategic objective of FM is to provide better infrastructure and logistic support to business and public endeavours of all kinds and across all sectors. At the local level, its objective is the effective management of

facility resources and services to provide shells of support to us all: support to the operations of organisations, their working groups, project teams and individuals.

According to Myeda (2012), the strategic approach of FM introduces the concept of efficient management to support both corporate and public endeavours, which is gaining re interest and recognition. Strategic FM roles include the formulation, implementation, and evaluation of market-firm decisions on the sourcing of space, services, funds and performance (Yiu, 2008). Yiu claims that the shift of more studies from operational service towards strategic management also shows that one of the strategic FM functions is to include the evaluation of asset and service performance in gaining interest and recognition. Strategic FM emphasises the formulation of strategies to meet business needs and the core value that they want to deliver to the customers for the end users' benefit. Clients also want cost-effective innovations, which can reduce their FM operational cost (Sarshar and Pitt, 2009).

The strategic role of FM is also as a business enabler. It bridges the gap between the physical environment of the workplace and the occupants. This is because FM is the process by which an organisation delivers and sustains agreed levels of support services in a quality environment at an appropriate cost to meet the business need (BIFM, 2007).

BIFM (2007) also introduces two strategic objectives of FM:

(i) To provide an active management of FM functions, in a co-ordinated manner and in accordance with corporate strategy that encapsulates FM.

(ii) To balance the demand with supply inside an organisation, reaching the optimised mix between needs or service levels and capabilities, constraints or costs.

The aim of FM should not be limited to simply reducing the operating expenses of a built facility, but should focus on enhancing efficiency of the facility as well (Amaratunga *et al*., 2000). Effective FM encompasses multiple activities under various disciplines, combining resources, and is vital to the success of any organisation (Mohd-Noor and Pitt, 2009a). In order for FM to be effective, both the "hard" issues, such as financial regulation and the "soft" issues, such as managing people, have to be considered (Atkin and Brooks, 2000). Both issues have to be efficiently managed to ensure that FM can harmonise and provide a safe and efficient working environment. To gauge the effectiveness of FM, it is necessary to

reach an understanding of the current conditions of the facility and to postulate changes in FM practices in order to achieve the desired performance (Lavy *et al*., 2010). Organisations need to recognise the need to make a big shift in implementing FM strategically, from both the short- and long-term perspective (Myeda, 2012).

There are three levels of FM implementation in an organisation. BIFM (2007) introduces the scope of FM aims and objectives in the strategic, tactical and operational level respectively, as shown in Figure 2.2. These three levels were implemented based on different targets. Strategic FM aims to achieve the objectives in the long term, whereas tactical FM targets for medium term, and operational FM seeks for daily achievement.

Strategic Level

To achieve the objectives of the organisation at a corporate level in the long term through:

- Defining the overall FM
- Policymaking, elaborating guidelines for space, assets, processes and services
- Active input and response at corporate level
- Initiating risk analysis and providing the direction to adapt to changes in the organisation
- Initiating and monitoring KPIs
- Managing the impact of facilities on the primary activities, external environment and community
- Maintaining relations with authorities, landlords and tenants, strategic associations and partners

Tactical Level

To implement the strategic objectives at a business unit level in the medium term through:

- Implementing and monitoring guidelines in order to follow strategies
- Developing budget plans
- Translating business objectives to the operational level
- Defining and interpreting KPIs (performance, quality, risk and value)
- Monitoring compliance with laws and regulations
- Managing projects, processes and agreements
- Managing the FM team
- Optimising the use of resources
- Interpreting, adapting to and reporting changes
- Communicating with internal or external service providers at a tactical level

Operational Level

To create the needed environment for the end users on a day-to-day basis through:

- Delivering services
- Monitoring and checking the service delivery processes
- Monitoring the service providers
- Receiving requests for services via a help desk or service line
- Collecting data for performance evaluations, feedback and demands from end users
- Reporting to the tactical level
- Communicating with internal or external service providers at an operational level

Figure 2.3: The three levels of FM implementation
(Source: BIFM, 2007)

2.8 FM Contributions

In the service aspect, FM provides a clear and transparent method of communication between the demand side and supply side by having an FM manager or FM team to conduct the co-ordination and integration of all the required support services. Myeda *et al*. (2011b) believe that the functions of FM should not be limited to the technical aspect of the facilities, but also to enhance the efficiency of the whole FM functions in supporting business. The requirement of having Service Level Agreements (SLAs) for every service facilitates the management of contracts through an objective approach to managing clients' and vendors' perceptions and expectations during the contractual period (Goyal, 2007). This also provides a transparent knowledge and information base for each service scope, which can be clearly formulated into FM strategies and can also be communicated to the end users.

Based on strategic decision, FM also introduces a simple and manageable concept of internal and external responsibilities for services, giving systematic procedures for outsourcing or in-house management. This also reduces the conflicts between internal and external service providers.

There are many business tools available to aid organisations' efficiency in business sectors, but FM offers a holistic and evolutionary approach to achieving optimum business solutions. This is by taking account of business policies, procedures and services, alongside procurement procedures, human resources management, training and development, business relationships and statutory considerations. FM can be strategic in managing business support functions and operational by concentrating on the detailed operational activities of the organisation (Barret and Baldry, 2004). In order to allow a business to compete and adapt to changes and other possibilities, a high level of integration must be achieved and the innovation process must be perceived as a knowledge supply chain (Goyal, 2007).

FM principles are integrated into the business scheme as an innovative way of giving the organisation a modern image, reducing unnecessary costs in the organisation's administration system and creating a better working environment (Mohd-Noor and Pitt, 2009a). Mohd-Noor and Pitt (2009b) also claim that the integration of FM into a business will create differences between competitors in terms of culture and strategy, and through quality of service with regard to the ability

to effectively respond to customers' requirements. Through this, an organisation will benefit more from the implementation of FM in its business process.

Many organisations have re-evaluated the contributions of FM in making a business successful, recognising the business consequences of poorly-managed facilities and searching for value that can be added through effective planning and management (Alexander, 1996). Facilities have an influence on organisational effectiveness and it is clear that the introduction of FM, as a response to the need for more effective control and the promotion of effectiveness in the whole workplace, sets new management challenges within organisations (Goyal, 2007).

The principle of FM takes into account the most effective use of synergies amongst different services, which will help to improve the costs and performance of an organisation. Therefore, an organisation needs to recognise the significant contribution of FM in delivering business objectives and routine operation in order to enable an organisation to adapt to the competitive market.

2.9 Responsibilities of FM Managers

FM managers play an important role in delivering a top quality service to the facilities' users. Two general areas of activity that fall under the responsibility of FM managers are management and maintenance. Management refers to four main components, namely the management of resources, planning, co-ordination and knowledge of regulations according to the current legislation. Maintenance supports the building operations (Myeda *et al*., 2011), and some areas of maintenance to be covered are preventive maintenance and also hierarchism of systems and emergency plan (Miro-Bedos and Girbal-Puig, 1991).

FM managers are responsible for integrating all factors of all the support roles that provide a working environment for an organisation. They are also seen to be responsible for co-ordinating and managing an extremely wide range of specialist areas including property and estates, construction and refurbishment, space management, maintenance and operations, IT, support services and, to an increasing extent, human factors (Bell, 1992). In short, they are mostly responsible for buildings and services that support businesses and organisations. This common perception of FM managers, however, does not comprise the holistic FM perspectives in the corporate world (Mohd-Noor and Pitt, 2009a). Due to an ever-changing role, the differences of each individual at different points of responsibility means that defining FM is becoming more complex (Lunn and Stephenson, 2000).

Important decisions regarding properties and facilities in large corporate organisations are often being made by unqualified and untrained staff with a less than satisfactory understanding of either property or FM issues, which is due to a lack of balance between knowledge and expertise. This does not reflect a professional management of the built environment. All these factors prohibit management and users from getting the maximum efficiency and effectiveness from the space.

FM managers are also responsible for ensuring a smooth relationship is established between themselves and their customers. According to the BIFM (2007), customers were unwilling to discuss confidential strategic business issues with FM managers for fear of the information leaking out into the market. Property managers or FM managers find it difficult to advise their many clients on the landlords' side of the fence without having regard to highly relevant, but privileged, information from the

tenants' side. Occupiers are seldom being invited to play a high-level advisory role within their organisation at an early stage in the property decision-making process. This has resulted in occupiers being left behind and, subsequently, wrong priorities being set. A lot of money and resources have been wasted as a result of too much speculation and guesswork, and not enough understanding, forward planning and communication, not to mention the knock-on effects in relation to the economy as a whole.

Another scenario is where the occupiers or end users of a property are not considered important to the landlords or their FM agents due to a conflict of interests. This has become the driving factor in the need for FM to be a separate management discipline. Landlords regard property as the main core business for most of their clients, but this is not the case with end users or occupiers. The big gap between the FM managers or landlords and occupiers or end users has led to properties and facilities being both badly managed and maintained on a significant scale. Customers or occupiers are also not getting the advice and support they need.

2.10 Innovation in FM Service Delivery

Many organisations are concerned about implementing innovative strategies into their FM sector. The need for an innovative approach to service provisions has never been great as FM innovation acts as an enabler, adding value to the organisation. The role of innovative management in FM is not about producing innovative solutions, but rather the provision of a creative environment in which solutions can be conceived, developed and applied (Goyal and Pitt, 2006).

The relevance and significance of innovations are not just limited to industrial products and processes alone, but also extend to the environment and facilities, organisational workers and employees, as well as to the buyers of products and services (Alexander, 1999). FM interface, for example, is a strategic approach to creating a cohesive workplace environment that is able to create an innovative culture. More importantly, innovation in FM must be implemented at an initial stage and matched with the organisation's overall innovation strategies. This is to enable holistic innovation values, belief and attitudes to be adopted at all levels within an organisation (Mohd-Noor and Pitt, 2009a).

There is a clear link between innovation and high-performing workplaces, where good managers inspire their employees and create a workplace culture in which new ideas are encouraged and rewarded (DTI, 2003). It has been further emphasised that an organisation's failure to embrace innovation culture will hinder the growth and sustainability of the establishment.

According to Amaratunga *et al*. (2000), FM can ensure that the mission and goals of the organisations may be achieved at the best combination of efficiency, cost and quality. FM is capable of contributing towards organisational success if it is given the opportunity to exploit new ideas and perform innovative activities that are regularly measured and integrated within the overall business goals and strategies of the key suppliers. In this regard, innovation in FM should be firmly installed as an integral part of the total management system and, if innovative ideas are perceived as a culture at all levels within an organisation, then it can flourish as a whole. Organisations that aim to be innovative need to be clearly and coherently managed as a set of processes by creative people. One thing to remember: the role of innovation in FM services is not just to produce innovative solutions, but also to establish and develop a creative environment in which solutions can be conceived, developed and implemented (Mohd-Noor and Pitt, 2009a).

2.11 The FM Industry in Malaysia

The Asia Pacific market in general shows an emphasis on the traditional function of property management in FM, and awareness of the impact of FM on overall business is also low (Ho *et al*., 2000). Similarly, the South-East Asia region shows unimpressive progress in FM development whereby property managers and owners are facing increasing competition and escalating maintenance costs. Instead of simply managing and maintaining buildings, they should focus on the strategic role of FM. This would then allow their respective organisations to maximise the value of their property assets (Moore and Finch, 2004).

In Malaysia, FM is perceived as a new term (Mustaffa *et al*., 2008). According to Moore and Finch (2004), the growth of FM in Malaysia is very slow and the field is still in its infancy. The definition of FM is poorly understood, thus FM is not being practised in an appropriate way. The traditional management methods are dominantly applied rather than an integrated FM system, although the new approach provides better strategic operations (Myeda and Pitt, 2013).

The lack of understanding of FM definitions and functions is possibly the root problem of the passive development of FM in Malaysia. FM practice is not guided and most often its importance is neglected in business strategies. Other than that, the non-existence of a FM department in the government body to provide guidelines and control on the quality level as well as to assess the performance of FM practice is the reason why analysis or evaluation of this field is difficult (Myeda and Pitt, 2013).

There is also a lack of standards and requirements to measure and monitor the efficiency of the FM services both for public and private sectors. The government is yet to regulate any standardised framework or policy on this, and therefore the consistency of the agreed level of FM services provided cannot be determined accordingly. Although there are different sets of PM frameworks and indicators proposed in the academic and in other industries globally, but there is yet an appropriate PM framework to be implemented in Malaysia. FM in Malaysia is in need of a comprehensive set of framework, which outlines the detailed PM indicators focusing on the specific scope of FM services. The existing PM frameworks are believed to be too generic for FM management and operation aspects and not inclusive of the specifically defined attributes for each FM service. Therefore, it is clear that a development of a new set of PM framework for FM would serve as an innovative tool for Malaysian industry to improve the FM service sector and FM service delivery in specific, through a provision of service standards and indicators that can be regulated efficiently.

2.11.1 Growth and Development

FM in Malaysia has started from a focus on maintenance where, in 1974, the Malaysian government circulated rules on the maintenance of public buildings, public roads, sewerage systems of buildings, and the responsibilities of the Public Works Department (PWD) or 'Jabatan Kerja Raya' (JKR). Following the government's launch of the Excellent Work Culture Movement in 1989 to promote quality service in the public sector, an administrative directive entitled "Guidelines for Strategies for Quality Improvement in the Public Service" was introduced in 1992 (Fei and Rainey, 2003). This set of guidelines is the first Total Quality Management guideline ever introduced by the Malaysian government. In the same year, the government also introduced the "Strategies for Quality Improvement in the Public

Service Guidelines". In 1996, FM embarked on a new era with the privatisation of the non-clinical support services in the government hospitals to three private FM companies (Kamaruzzaman and Zawawi, 2010).

In 2001, the then Deputy Prime Minister Datuk Seri Abdullah Ahmad Badawi expressed his concern regarding the need to upgrade the quality level of public services (CIDB, 2010). Since then, Malaysia has put great focus and emphasis on the development of FM, particularly in the public sector, where encouragement is being given in order to resolve FM issues and problems. Five years later when the government launched the "9th Malaysian Plan" in 2006, there was an allocation of one trillion Ringgit Malaysia (RM) for public building facilities' maintenance (Economic Planning Unit, 2006), which is a substantial amount to allocate to any tool, system or guidelines for FM growth in Malaysia (Egbu, 2008). Under the "9th Malaysian Plan" also, the maintenance and the facilities' contents are included in the concession agreements of privatised infrastructure projects. The private finance initiative (PFI) specifies the private sector's responsibility in the construction, management, maintenance, refurbishment and replacement of public sector assets.

In 2007, "Guidelines for the Management of Movable Assets" and a new act, the Building and Common Property (Maintenance and Management) Act 2007: Act 663, were circulated. However, this act focuses only on the maintenance and management of residential or housing properties, particularly on the responsibilities of the managing agents and joint management body and maintenance funds. In the same year, the government was first involved in organising a national convention, the National Asset and Facility Management (NAFAM), in Kuala Lumpur.

In the first quarter of 2009, the government launched the "Government Asset Management Policy" manual, which is mainly focused on the principles of government asset management and does not outline any standards or specification for the FM services (PWD Annual Report, 2009). A system named mySPATA was also developed for the management of immovable assets (PWD Annual Report, 2009). All the government initiatives in providing guidelines, policies and a manual on service quality indicate that the government is slowly taking a step forward (refer to Figure 2.4). However, no specific guideline on FM practice has yet been developed for both public and government sectors.

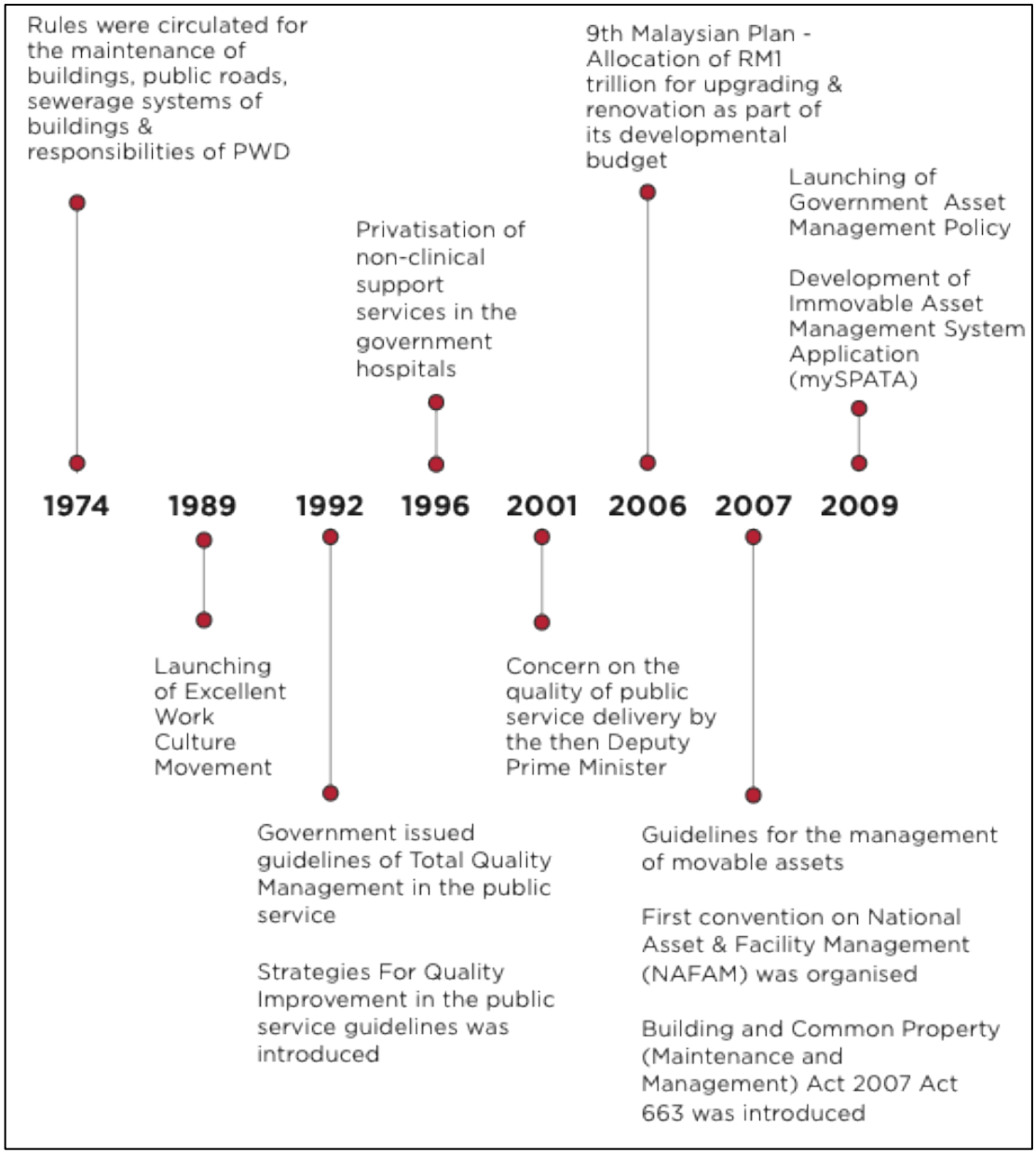


Figure 2.4: Government's initiatives in providing quality public services

Based on the figures generated from the 2009 PWD Annual Report, the Building Facilities Maintenance Division has overspent a substantial amount of RM 1,416,039.84 million on top of the RM 3,618,109.53 million operational budget allocated by the government. This indicates the need for control of the budget allocation and expenditure, particularly in the public building services. On the contrary, there was no development budget allocated to this division, which is suspected to be the factor responsible for null development of any facilities system or guidelines by the government.

There is also a lack of a maintenance and facilities culture in Malaysia. However, the government's current main agenda is to provide a holistic approach towards integrating effort and collective responsibility for greater performance (Kamaruzzaman and Zawawi, 2010).

2.11.2 Practice

At present, the role of managing buildings in general is undertaken by real estate companies, as FM recognition is very poor. FM is widely adopted by only a single sector: healthcare, by which FM was first brought into the Malaysian industry in 1997 (Kamaruzzaman and Zawawi, 2010). This was followed by the appointment of a private company as a consultant to assess the performance of the concession companies (Hamid, 2007). From that year forward, offices and hospitals appear to have dominated the attention of the FM profession in Malaysia whilst other facilities are seldom seriously considered. Formal practice of FM as a recognised discipline is a new phenomenon and as such is vulnerable. Unfortunately, this area is hardly recognised in Malaysia.

Record or data tracking is poorly or hardly compiled, resulting in a poor record of data management, which contributes to negative future planning of maintenance works and services management. In general, the service quality is low (Ariff, 2007), possibly due to the low standard of maintenance set. This could possibly stem from the lack of awareness of the high standard of service that needs to be delivered by the provider to match the expectation of the users or customers. FM implementation is not progressing, due to lack of guidance on the service standard and performance. Hence, comparisons cannot be made as no specific structure can be used to benchmark the performance of FM practice.

However, there are some improvements observed by Kamaruzzaman and Zawawi (2010) where the Integrated Building Management Systems which require integrated IT advancement and strategic management approach are widely used, which can stimulate advancements in FM. A recent rise in studies on various related topics also shows the initiatives taken in defining the importance of adopting FM in Malaysia. A certain degree of synergy is demonstrated through research collaborations between academic institutions and FM practitioners. Various organisations have also started to promote the need of FM as part of the business organisation, which also contributes to the increasing awareness of the role of FM.

2.11.3 Profession

Despite the initiatives taken, FM has not been readily adopted or encouraged by the Malaysian government in any organised way. Contrary to other countries where the IFMA, BIFM and Facility Management Association of Australia (FMA) have been established in recognition of FM, the Malaysian Association of Facilities Management (MAFM) is still not being made known to other professions or to the public. The association was first formed in 2001 and yet, up to today, it has not taken any remarkable outcome or major steps to promote the FM profession locally. The other closely related professional bodies involved in managing property are The Board of Valuers, Appraisers and Estate Agents (BoVAEA) and the Malaysian Association of Professional Property Managers (MAPPM). Similarly, there is a Building Management Association of Malaysia (BMAM) to represent and protect the overall interests of the building management industry in Malaysia. More often, FM is seen not as a profession on its own but rather as a part of property management services. The users cannot distinguish the overlap and contradiction of the FM and PM professions, as the FM profession cannot stand on its own identity and is often being confused with the role of property managing agent.

FM is a multi-disciplinary function that involves many professionals in the decision-making processes, but to date in Malaysia few are designated as 'facility manager' (Kamaruzzaman and Zawawi, 2010). The responsibilities of FM managers are often being undertaken by various professionals, especially by the Mechanical and Electrical Engineers and the Civil Engineers. These professions are not specifically designed to cover the required skills and knowledge expected from FM managers. Therefore, FM roles need to be addressed and established by the government, to give FM an opportunity to be developed and to mature progressively. The lack of efforts given to this has resulted in no strategic development being planned or organised for the FM industry. An example of industry expertise should be taken from the developed countries in the West where FM significantly contributes to the success of business development and planning. This gap of development in Malaysia has underutilised the capacity of the FM industry to shape the country's economic and development future. Non-existence of a specific organisation to provide guidelines and control on the quality level as well as to assess the performance of FM practice is the reason why analysis or evaluation of this field is difficult.

2.11.4 Problems and Challenges

In general, FM challenges include lack of recognition, education and training needs, professional status, career pathways, information standard, performance benchmarking, cost value versus value in service procurement, and the corporate and community contribution of FM (Ballesty, 2007). It is a clear challenge for FM organisations to develop the managerial leadership that can build the organisational competencies needed to balance knowledge and skill requirements and improve, as well as maintain them within the increasingly competitive FM market (Ismail, 2007). This leads to a lack of local expertise as well as to the disaggregated deployment of specialists, which cannot meet the challenges in Malaysia at the present time.

Samad (2007) declares that the first and foremost issue in handling FM is to determine the right department to be in charge of handling government buildings, as this involves public assets and funds. The confusion of selecting the responsible ministry or department to perform a full surveillance of FM practice in Malaysia indicates that the sector is in need of strategic organisation and planning. The lack of an FM government body also restricts the evaluation of FM industry development in Malaysia. There is also a problem in outsourcing for local expertise to provide an immediate response to any failure of service, as well as a lack of FM practitioners in the local market who can provide advice or assistance in the implementation of FM.

The key issue faced by FM in Malaysia is the low service quality (Ruslan, 2007). The implementation of FM is considered to be too late for some properties, as at present there are many aging buildings with high levels of deterioration. FM may help in standardising the future maintenance allocation required but this, however, may not contribute to minimisation of maintenance costs if the building services are in poor condition due to improper maintenance carried out in the past.

Despite the government's commitment with the allocation of RM 1.079 million for upgrading renovation, there is evident of shoddy work and buildings falling into disrepair (Hassan, 2007). According to the Head of Maintenance Sector, the standard of maintenance in government buildings is not up to expectations (Annies, 2007). The real challenge of FM lies in the lack of standards that can be used to measure the quality level and performance of both traditional and integrated FM applied by building or property management companies. The slow pace of regulating appropriate FM standards or regulations is another factor that requires

immediate action. A good level of planning for FM may help in standardising the future maintenance allocation required and planning for the strategic maintenance approach.

Whilst Malaysia is making progress in the development of FM, there is an overall mixed signal (Moore and Finch, 2004). There remains a general lack of understanding and progress of the key drivers that continue to hamper the successful development of FM. One of the drivers is that when there is no recognition of the FM profession this leads to a lack of participation from the whole organisation. The result is that the FM sector fails to demonstrate the added value that FM can contribute to the organisation's overall benefit.

Malaysia is still lagging behind in software development specific to FM. Assets in Malaysia require good maintenance performance to extend their life capacity. In this respect, Hussin (2007) suggests that the application of technology in the management of assets leads to effective and efficient management of the government's assets and facilities. Adoption of integrated FM requires high initial cost, unless the computerised programs can be developed locally in the market or funding support is provided. The adoption of an integrated FM requires space allocation in order to store the automation mechanism required to operate the integrated service system. This may not be a problem for new developments but, as earlier mentioned, there are lots of aging buildings and densely populated buildings where space allocation might be an issue.

2.11.5 Opportunities

The changes in the services offered include integrated and computerised systems like the Computerised Maintenance Management System (CMMS) or the Enterprise Asset Management (EAM) System recently developed by the Construction Industrial Board (CIDB), which open up opportunities for the FM sector to be developed rapidly. Although the technological tools available are not sufficient to enhance the service delivery (Zahri, 2007), the constant development of Information Technology (IT) in Malaysia also opens up the enhancement of service delivery in FM. The progressive changes in technology have seen more and new technologies being made available in Malaysia and the adoption of these technologies often requires advancement in the management and IT systems. Most of the modern technologies are integrated systems, requiring IT technology in order to operate them. Generally,

the integrated computerised system is much preferred by potential tenants or buyers, and this supports the development of FM.

For many leading participants in the outsourcing industry today, the well-understood tools of performance-based or incentive contracting and improved techniques for operational management are now taken for granted as the starting point for services delivered. The top players on both the in-house and industry supply side are now increasingly responsive to core business needs. They are addressing a more strategic challenge using the concepts within the construction industry to construct service agreements that free up core business capital tied up in facilities, and at the same time reducing costs and increasing quality.

There is also the advantage of FM being regarded as a new subject for industry, whereby there is flexibility for different techniques, and approach practices are readily available to be implemented. The involvement of FM could also be introduced during the early construction phase: planning and design, where design failure can be avoided and good planning of the space and environment can be delivered. Current rapid development of high-rise buildings in densely populated cities calls for a good maintenance and strategic planning due to the rising cost in both occupying and maintaining space (Myeda and Pitt, 2013). The maintenance and services rates are becoming high in Malaysia and FM is seen as a substitute for strategic planning, as it records all relevant data specific to the FM area. There is also a change in the social perception in which a well-maintained building is much more sought after by potential tenants or buyers. This has resulted in a need to plan and to design a suitable management approach that may suit the needs of the buyers/tenants.

2.11.5.1 Demands

The combination of outsourcing and privatisation is boosting demand for FM services and driving revenue within the industry in Malaysia. As the commercial and education sectors are heavily pushing third party FM, outsourcing to third party players remains strong compared to typical in-house management. The establishment of national conferences such as NAFAM signifies the government's attitude to the establishment of a systematic management of service delivery. Intentions to improve the public delivery system aiming for a well-functioning national asset and facilities will contribute to a more efficient and effective public

service. Hassan (2007) believes that the service delivery can be improved by implementing performance measures to evaluate the maintenance projects and project monitoring.

The greater complexity in today's building facilities also demands a more professional approach to managing and maintaining these physical assets, and the FM profession has a great chance of implementing strategic techniques and practice to improve the quality standard. This will subsequently lead to a growing awareness of the social perceptions regarding buyers' and users' needs for well-maintained buildings and environment. With the rapid changes in information technology, clients now have a preference to upgrade from a traditional FM practice to an advanced computerised system for the management of facilities.

Ariff (2007), Head of Maintenance Sector, Public Works Department, has voiced his concern on the need for co-ordination in an organisation's vision in order to integrate the people, process and technology or systems. He further claims that a strategic model is needed to overcome the challenges and issues faced in the Malaysian FM sector.

2.12 Chapter Summary

It is clear that despite the less acceptance and acknowledgement of FM service within the Malaysian context, there are demands and opportunities for FM industry to progress further with strategic plans and actions by the government. The emphasis of service delivery for instance is one fundamental aspect that needs to be focused. Chapter 3 focuses on the literature of PM, including its potential in offering more values and benefits the organisations and people involved, the themes of performance measures or metrics that constitute a good performance measurement system (PMS) and also factors that need to be considered in selecting performance measures. It also introduces the previous studies on the PMS models that have been developed in PM field.

CHAPTER 3: PERFORMANCE MEASUREMENT (PM): KEY ELEMENTS AND SERVICE DELIVERY

This chapter focuses on the literature pertaining to PM particularly in the key elements and service delivery aspects. This includes the definition of a Performance Measurement System (PMS), how it can be developed, and the potential problems that can arise in developing it. Principles of an effective and strategic PMS are also introduced to give an understanding of an ideal PMS. This chapter also elaborates on the types of performance measures that can be incorporated into a PMS based on previous literature studies.

3.1 Introduction to PM

PM may be defined as the process of quantifying action, where measurement is the process of quantification and action correlates with performance (Neely *et al.,* 1995; Parida and Kumar, 2006). It may also be defined as the process by which a company manages its performance. It should be in line with the company's corporate and functional strategies and objectives (Bititci *et al.,* 1997). PM is also perceived as the process of determining how successful organisations or individuals have been in attaining their objectives and strategies (Kagioglou *et al.*, 2001). This is because it enables managers to make decisions based on facts rather than on assumptions (Parker, 2000). An operational PMS also acts like an early-warning system where it gives an indication for problems and areas for continuous improvement; thus, it has been given a prominent place in most organisations (Parida and Kumar, 2006; Martinez, 2005; Baldwin *et al*., 2001).

Measurement is an area that has been increasingly discussed over the past few years with familiar adages like "you can't manage what you cannot measure" and "what gets measured gets done" (Amaratunga, 2000). Measurement is essential as it provides feedback, builds understanding and encourages intrinsic motivation rather than a tool for top-down management control (Meekings, 1995). Meekings further added that the recognition of measurement in the world's industries has shown that the current focus is on systematic thinking, fundamental structural change and organisational learning, instead of mindless target-setting, continual fire-fighting or the rigorous allocation of blame. PM is often seen as an effective tool for increasing the competitiveness and profitability of manufacturing companies through the support and encouragement of productivity improvements. Neely *et al*.

(1995) also agree that performance should be defined as the efficiency and effectiveness of action. According to Cain (2004), PM is used as the first stage of any improvement process that benefits the end users with lower prices and the organisation with higher profit margins and at the same time enhances the product quality.

PMSs are compared in terms of how easily they are derived from strategic objectives, how easy they are to understand and also whether they help to provide a long-term view of performance (Tangen, 2003). In the past, PM has been criticised for judging performance against the wrong framework of performance measures and, recently, there is widespread support for the belief that performance measures should be developed from strategies (Neely *et al*., 2003). However, there are negative effects of PM that are based on complicated and excessive performance measures (Martinez, 2005). This has caused problems with investment and the commitment of people involved through the consumption of a lot of time and the limiting of the freedom of managers due to its rigidity and inflexibility.

In literature, PM is a subject that is often discussed but rarely defined; however, since the 1980s it has become a very popular research topic (Tangen, 2003). Since then, it has received considerable attention and remarkable progress has been made. The concept of PM was first introduced around the 1860s and 1870s (Kaplan, 1984). It was first developed based on simple yet straightforward objectives that were to monitor and maintain the organisational processes aiming to achieve the goals and objectives of the organisations (Nani *et al*., 1990).

During the first introduction, PM was mostly concerned with the financial aspects of an organisation (Kagioglou, 2001). From that point forward, Ladrum *et al*. (2000) believe that the globalisation, diversification and technological innovations have pushed the rapid development of PM within business organisations. At this point, traditional performance measures were perceived as not suitable and unable to be used as the sole criteria for assessing performance (Kennerly and Neely, 2002). Neither industry nor academia has agreed on what new performance measures should be used or on what criteria the selection of performance measures should be based (Tangen, 2003).

Slack *et al*. (2001) introduced five types of performance objectives, namely cost, flexibility, speed, dependability and quality. According to them, the effects these performance objectives have on an operation are:

- High-quality operations do not waste time or effort having to re-do things, nor are their internal customers inconvenienced by flawed service.
- Fast operations reduce the level of in-process inventory between micro operations, as well as reducing administrative overheads. Products can also be delivered earlier to the customer.
- Dependable operations can be relied on to deliver exactly as planned. This eliminates wasteful disruption and allows the other micro operations to operate efficiently.
- Flexible operations adapt to changing circumstances quickly and without disrupting the rest of the operation. Flexible micro operations can also change over between tasks quickly and without wasting time and capacity.
- Low cost operations allow the company to sell their products at a competitive price, and increase profitability.

Proponents of any one particular form of measurement are keen to stress the advantage of that measurement, but are much more reluctant to discuss its disadvantages or to highlight situations under which it may not be appropriate. Even though numerous theoretical frameworks for PM design can be found in the management literature, the measurement practitioner in a company is offered little practical guidance when trying to decide what performance measures are suitable for the company's specific situation (Tangen, 2003)

3.2 The Development of A PMS

A PMS may be defined as the set of metrics used to quantify the efficiency and effectiveness of action (Neely *et al*., 1995). It is also seen as the comparison of results against expectations, with the implied objective of learning to do better (Rouse and Putterill, 2003). A PMS that incorporates the implementation of framework or performance measures can focus on their specific performance targets effectively. A PMS that comprises appropriate performance measures has the potential to offer more values and benefits to the people involved. (Myeda and Pitt, 2012).

Tangen (2002) proposed a few basic criteria necessary for performance measures to be effective:

- The performance measures must be derived from strategic objectives to ensure that employee behaviour is consistent with corporate goals
- The performance measures must provide timely, relevant and accurate feedback, from both a long-term and short-term perspective
- The performance measures should be undertaken in ways that are easily understood by those whose performance is being evaluated
- The measurement aspect should be accomplished by a limited number of financial and non-financial performance measures

The development of a number of PM frameworks and approaches or processes emerged to meet the need for companies to align their PMS with their strategic goals (Hudson *et al*., 2001). The balanced scorecard (BSC) has acted as a catalyst for further research into the characteristics of, and approaches for, developing strategic PMSs (Bititci *et al*., 1997; Oliver and Palmer, 1998; Hudson *et al*., 2001), although many of those companies implementing the BSC are not successful (Neely *et al*., 2003). The change of emphasis to developing a strategic PMS represents a revolution in the field of PM (Neely, 1999). While there has been increased attention on PM per se, the current literature is inadequate in respect of the specific Small Medium Enterprise (SME) context (Hudson *et al*., 2001).

Previous research has normally focused only on the content of strategic PMS for other industries in general, but not specifically on FM (Myeda and Pitt, 2012). The requirements identified for effective measurement of PMS are mostly suitable to cater for manufacturing industries. There is a need to determine, verify and integrate the axioms of modern PM in the context of FM (Amaratunga, 2000). Traditional accounting-based performance measures have been characterised as being financially based, internally focused, backward-looking and more concerned with local departmental performance than with the overall health or performance of the business (Bourne and Neely, 2003). Many researchers and practitioners realised that, due to increased complexity of organisations and the markets in which they compete, it was no longer appropriate to use financial measures as the sole criteria for assessing success. Johnson and Kaplan (1987), for example, highlighted the failure of financial performance measures to reflect changes in the competitive circumstances and strategies of modern organisations. Kaplan and Norton (1992)

also claimed that the traditional financial measures fail to provide information on what customers want and how competitors are performing.

Subsequently, an evolution of PM started in the early 1990s with many researchers starting to design and implement PMS. Responding to this, Neely (1999) has suggested seven main reasons for the evolution:

(1) The changing nature of work had caused traditional accounting systems with their emphasis on direct labour to become obsolete.
(2) Increasing competition, driving a need for measurement of quality of service, flexibility, customisation, innovation and rapid response.
(3) Specific improvement initiatives that rely on PM, such as Total Quality Management (TQM), Lean Production or World Class Manufacturing.
(4) The establishment of national and international quality awards.
(5) Changing organisational roles for PM from accounting to human resource managers.
(6) Changing external demands on performance accountability, such as the demands from regulators in newly deregulated industries.
(7) The power of information technology, making the capture and analysis of data far easier, and opening up new opportunities for data review and subsequent action.

In the PMS development process, the features of typical process methodologies are development process requirements, characteristics of performance measures and also dimensions of performance. A process should specify how an organisation might be attracted to implement the process, who should participate in the process and how the project of implementing the process should be managed (Mills *et al*., 1995). Platts (1990, 1994) has introduced a generic process framework that can be used to implement the key steps in developing a PMS, as shown in Figure 3.1. There are four processes that Platts (1990, 1994) believes can be implemented in PM, namely point of entry, participation, procedures and project management. These processes outline the relevant elements necessary to ensure that PMS can be developed accordingly.

Processes	*Implementation in PM*
Point of entry	Involves an evaluation or audit of the existing PMS to highlight areas of deficiency and indicate a need for improvement
Participation	Should include the staff who will be the key users of the performance measures developed
Procedures	To ensure strategic alignment, a procedure for identifying strategic objectives should be included. A method for developing the performance measures is necessary, along with a procedure for maintaining the new PMS
Project Management	Should include top management support, everybody on board, clear explicit objectives, time-framed project management

Figure 3.1: Generic process framework in developing a PMS

(Source: Platts, 1990, 1994)

3.3 Problems in Developing and Implementing a PMS

PMS plays an integral part in the management planning and control system of an organisation (Neely *et al*., 2003). Based on a case study of a group of operation managers, Hudson *et al*. (2001) has suggested the key problems in developing and implementing PMS, as follows:

- Managers resistant to establish specific, defined targets for performance measures
- Staff turnover and the re-allocation of management to new roles, resulting from a restructuring programme, provided an unstable environment for the development of the PMS
- The restructuring programme became a higher priority than the PM development process for all the managers concerned
- Operations managers disregarded the process necessary to identify the suitable performance measures required to address the company's immediate needs and focused more on the basic one needed to improve customer perception instead of the top level stage of the PMS
- The emphasis on strategic measures led to a perception that the approach was a future planning activity rather than one which facilitated improvements in current performance

- No operations managers had taken steps to redesign or update their current PMS; this suggests that there are substantial barriers to strategic PMS development in SMEs

Various authors have suggested a few barriers that lead to problems in implementing PMS. These barriers can be grouped into four main categories - management, employee, formulation and service direction, as shown in Table 3.1 Barriers concerning management aspects are lack of senior management commitment (Hansson *et al*., 2003; Trader-Leigh, 2002 Cheng *et al*., 2007; Hudson *et al*., 2001), unclear regarding objectives and benefits of the PMS (Hansson et al., 2003), manager's resistance (Hudson *et al*., 2001), inadequate training and support (Cheng *et al*., 2007) and also organisational fears (Brown, 2010).

Issues or factors pertaining to employees are their resistance to change (Saad and Siha, 2000; Hansson *et al*., 2003; Cheng *et al*., 2007), lack of clarity or rationale (Hansson *et al*., 2003; Cheng *et al*., 2007), employee fear of status being affected or stressful work conditions (Hansson *et al*., 2003), staff turnover and problems in reallocating new roles (Hudson *et al*., 2001) and reluctance to invest time and energy (Brown, 2010).

There are barriers from the formulation aspect of the PMS that hamper its implementation. These are difficulties in evaluating the relative importance of measures (Schneiderman, 1999; Bierbusse, 1997), problems identifying suitable measures and also unclear regarding the process and procedure involved (Schneiderman, 1999; Bierbusse, 1997; Hudson et al., 2001), striving for perfection (Lewy and Mee, 1998; Schneiderman, 1999) and also no proper sample or guidance (Brown, 2010).

As for the service direction, five suggested barriers are lack of awareness and understanding of its importance (Hudson et al., 2001), lack of strategic planning skill, more reliant on the software as the solution (Brown, 2010), more focused on short-term decision making (Bourne and Neely, 2003), and also more priorities given to other management aspects (Hudson *et al.,* 2001).

Management	• Lack of senior management commitment • Unclear regarding objectives and benefits • Manager's resistance • Inadequate training and support • Organisational fears (Hudson *et al*., 2001; Hansson *et al*., 2003; Trader-Leigh, 2002 Cheng *et al*., 2007; Brown, 2010).
Employee	• Employee resistance to change • Lack of clarity/rationale • Employee fear of status being affected or stressful work conditions • Staff turnover and problems in reallocating new roles • Reluctant to invest in time and energy (Saad and Siha, 2000; Hudson *et al*., 2001; Hansson *et al*., 2003; Cheng *et al*., 2007; Brown, 2010)
Formulation	• Difficulties in evaluating the relative importance of measures • Problems identifying suitable measures • Unclear regarding the process and procedure involved • Striving for perfection • No proper sample or guidance (Lewy and Mee, 1998; Bierbusse, 1997; Schneiderman, 1999; Hudson *et al*., 2001; Brown, 2010)
Service Direction	• Lack of awareness and understanding of its importance • Lack of strategic planning skill • Reliance on software as solution • More focused on short-term decision making • Priorities given to other management aspects (Hudson *et al*., 2001; Bourne and Neely, 2003; Brown, 2010)

Table 3.1: Barriers in implementing PMS

3.4 Strategic PMS

The concept of strategic PM was developed in response to the criticism that traditional PMSs are financially driven and historically focused (Kaplan and Norton, 1993). Measurement needs to be related directly to the organisation's mission and objectives in order to reflect the company's external competitive environment, customer requirements and internal objectives (Kennerley and Neely, 2002). The performance measurement needs to be aligned to organisational strategy (Kaplan, 1983; Eccles, 1991; Gregory, 1993; Kaplan and Norton, 2001; Murty *et al.*, 2002; Parida and Kumar, 2006). The measures should provide an explicit link back to operations (Greatbanks and Boaden, 1998). A PMS that is designed based on strategies would provide data that could input directly into the strategy formulation

process (Hudson *et al*., 2001). Research has shown that SMEs that link operations to their business strategies outperform the competition (Argument *et al*., 1997). Resource limitations associated with SMEs indicate that the dimensions of quality and time are critical to ensure that waste levels are kept low and that a high level of productivity performance is attained (Hudson *et al*., 2001). Hudson *et al*. also proposed a set of characteristics of strategic PMS for SMEs:

- Personalises management, with little devolution of authority
- Severe resource limitations in terms of management and staffing levels as well as finance
- Reliance on a small number of customers, and operating in limited markets
- Flat, flexible structures
- High innovatory potential
- Reactive, fire-fighting mentality
- Informal, dynamic strategies

Having a small number of customers suggests that, in order to remain competitive, SMEs must ensure that customer satisfaction remains high and that they can be flexible enough to respond rapidly to changes in the market (Hudson *et al*., 2001). Meekings (1995) suggests that PMS has significant implications for the FM business; for example, the role of maintenance may be changed from backward-looking record keeping to forward-looking prediction and insight. The focus is also on systematic thinking, fundamental structural change and organisational learning instead of mindless target setting, continual fire-fighting or the rigorous allocation of blame.

3.5 Principles of An Effective PMS

In designing the framework for PMS, one must consider the important aspects like goals, design and management (Wordsworth, 2001). Such a framework is essential for an organisation to align its PMS with the company goals by setting objectives and defining key performance at each level. A good PMS should include subjective performance measures as well as objective performance measures. Objective performance measures are sought as they have the advantage of not being biased by whoever is providing the opinion. Conversely, subjective performance measures provide a wealth and variety that is not obtainable from objective performance measures alone (White, 1996). Involvement of employees in the development of the

PMS is also needed to frame a good measurable PMS, as employees are the individuals who operate the processes and who know the task best. Thus, getting them involved will not only result in commitment towards efficient PMS but also influence the actual performance (Sinclair and Zairi, 1996). Bourne *et al*. (2000) also believe that PMS requiring regular reporting are best automated.

Another approach to include in developing a good PMS is the Total Quality Management (TQM) philosophy along with associated Critical Success Factors (CFSs), which has been proven to achieve dramatic improvements in the implementation of PMS (Sharp *et al.,* 1997). Dwight (1995) has suggested two other approaches to PM: the system audit approach and the incident evaluation approach. These approaches are based on the idea that definition of performance can be stated in terms of the change in value or the probable future earnings of the system. One favourable aspect of such systems might be that they capture the impacts of any actions on future periods. He further proposed a set of properties of a good PMS:

- An agreed standard exists, for which there is generally commitment from those required to control it, or improve by it;
- There is a known cause and effect relationship between the performance measures and a retained or improved business performance; and
- There is an understanding of the various influences on the performance measures proposed

Similarly, Wordsworth (2001) presents the key design features of a quality PMS as follows:

- Appropriateness of the performance measures in relation to the strategic objectives of an organisation. Selection criteria: each performance measure should have an organisational goal or objective to feedback
- Vertical alignment of performance measures to translate the strategic objectives into different levels of hierarchy. Deployment criteria: recognition of different hierarchies
- Balanced view of the maintenance system
- Integration of objective and subjective performance measures
- Employee involvement
- Cross-functional structure

PMS should become a framework for everyone to understand and align with top-level objectives of the organisation and enable them to actively and enthusiastically participate in continuous improvement (Meekings, 1995).

3.6 Existing PMS

Over the years, several frameworks have been developed for measuring performance. Until 1980, PM was based mostly on financial measurements (Parida and Kumar, 2006). According to Kaplan and Norton (1992), the approach at that time was focusing more on four components: financial, customers, internal processes, and innovation and learning. In the subsequent years, various researchers have developed frameworks considering the use of non-financial measurements and intangible assets on the achievement of competitive advantages.

This study compiles a few types of PMSs that have been introduced since the early phase of PM (refer to Figure 3.2). Kaplan and Norton (1992) have introduced the principle of mixing financial and non-financial performance measures in the Balance Scorecard. Although the system appeared to be balanced and new at that time, it seemed to have a lack of mechanism to maintain it, which possibly created problems in executing the strategies between the top level, strategic level and operational level. Lynch and Cross (1991) have proposed the Performance Pyramid system, which established how objectives from the top level are communicated to the operational level and, subsequently, how the formulated measures are conveyed back to the top level. Fitzegrald *et al.* (1991) have suggested both leading and lagging performance measurements in the proposed Results & Determinants Matrix. It gives an overview of what performance measures should look like and provides a useful development process. However, this PMS does not include customers in the performance dimensions. Similarly, Ghalayini *et al.* (1997) also do not emphasise the human resources or customers in their proposed Integrated Dynamic PM. Although it provides a process for ensuring fast feedback, the system seems complicated as it has several different tools that might confuse the users. The Integrated PM System proposed by Bititci *et al*. (1997) provides a useful process in identifying the link between the performance measures and strategic plans of the business. It also covers many of the criteria required for a comprehensive PMS but fails to provide a structured process to specify objectives and timescales for its development and implementation.

Neely *et al.* (1996, 2003) have suggested The Cambridge PM, which offers a very structured process in identifying the suitable performance measures to suit business objectives. However, the system focuses more on the business unit and suggests that the development process for operational measures is optional. Oliver and Palmer (1998), in the proposed Integrated Measurement Model, define the performance dimensions and provide a mechanism for designing the measures, but do not include any proposal regarding the development process. Flapper *et al.* (1996), in the proposed Consistent PMS, introduce the performance indicators and how to set values for them. This model also outlines the process for developing and implementing PMS, despite not reaching an insight into the relationship between performance objectives.

All the proposed and published PMSs have significant values in giving directions for implementing PM into the business. However, few have proposed any performance measures or indicators that emphasise the service delivery performance.

PMS	***Balance Scorecard (Kaplan and Norton, 1992)***	***Performance Pyramid (Lynch and Cross, 1991)***	***Results & Determinants Matrix (Fitzgerald et al., 1991)***	***Integrated Dynamic PM (Ghalayini et al., 1997)***	***Integrated PM System (Bititci et al., 1997)***	***The Cambridge PM (Neely et al., 1996, 2003)***	***Integrated Measurement Model (Oliver and Palmer, 1998)***	***Consistent PMS (Flapper et al., 1996)***
Emphasis	A balance between the use of financial and non-financial performance measures to achieve strategic alignment designed for medium to large company context	Useful for describing how objectives are communicated down to the operational level and how measures are conveyed back up to higher levels	Considers leading and lagging performance measures and targets	Built on several different concepts to develop the system	Links between performance measures and strategic plans and/or critical success factors of the business.	Offers explicit guidance on how to develop and implement a strategic PMS effectively	Focuses on various aspects from customer and human aspects to the quality, flexibility, timeliness and finance factors	Defines performance indicators and the relationship between those indicators and sets target values for them.
Advantages	Good coverage of the dimensions of performance, giving a new concept of having tangible and intangible measures	Provides an explicit link between strategy and operations, and also encourages a user-centred design	Specifies what performance measures should look like and provides a useful development process	Explicit process for maintenance and for ensuring fast and accurate feedback	Covers many of the criteria required for a comprehensive PMS	Covers a comprehensive process for the development of a strategic PMS	Comprehensive approach as it defines the dimensions of performance and provides a mechanism for designing the measures	Gives a very detailed process for developing and implementing PMS
Disadvantages	Provides no mechanism for maintaining the relevance of defined measures Lack of integration between the top level, strategic level and operational level, giving a potential problem in the execution of strategies Fails to specify a user-centred development process	Fails to specify, in any detail, either the form of the measurement or the process for developing them	Does not include customers or human resources as dimensions of performance and cannot give a truly balanced view of performance	Several different tools are potentially complicated to understand and use Fails to provide an explicit process for developing the PMS and is inadequate with respect to the human resource dimension	Fails to provide a structured process that specifies objectives and timescales for development and implementation	Development of operational measures is described as an optional process	Lack of a structured process for overall development	Provides no insight of the relationship between performance objectives

Figure 3.2: Comparison of PMSs developed by various authors

3.7 Identifying Performance Measures

Performance measures should be clearly defined, have an explicit purpose, be relevant, easy to maintain and simple to understand and use (Hudson *et al*., 2001). Globerson (1985) believes that performance measures must be clearly defined with an explicit purpose. Simplicity is also the key, with many authors suggesting that performance measures have to be simple to understand and use, relevant and easy to maintain and provide fast and accurate feedback (Maskell, 1989; Lynch and Cross, 1991; Neely *et al*., 1996). Most importantly, they need to stimulate continuous improvement. Performance measures are used to provide feedback, build understanding and encourage intrinsic motivation rather than as a tool for top-down management control (Meekings, 1995). It is important to conceptualise the content of performance measures' characteristics and appropriate dimensions of performance. This is important because a development process needs both structure and relevant content in order to effectively deliver value to business. Developing a strategic PMs is necessarily long term and it explicitly requires the resulting performance measures to be strategically focused.

Performance measure is a metric used to quantify the effectiveness level of an action (Neely *et al*., 1995). Performance measures are often classified and measured according to the performance objectives, cost measures, quality measures, speed measures, dependability measures and flexibility measures (Slack *et al*., 2001). Tangen (2003) proposes a few factors in selecting the appropriate type of performance measures to suit the nature of the organisation:

(1) The purpose of the performance measures
(2) The level of detail required
(3) The time available for the measurement
(4) The existence of available predetermined data
(5) The cost of measurement

White (1996) suggests that performance measures could be identified according to the following aspects:

(1) Competitive priority: the characteristics of the performance measures that are considered competitive, such as cost, quality, flexibility, delivery reliability, or speed

(2) Source of data: the data can either be internal, where the sources of data are within the organisation, or external, where the sources of data are from outside the organisation
(3) Type of data: the data can be subjective, that is based on perception or opinion; or objective, which is based on observable facts and does not involve opinion
(4) Reference: whether the performance measures are benchmarked with other organisations or self-referenced, which does not involve any comparison with another organisation
(5) Orientation to process: to determine whether the performance measures are the input or outcome of some process

Flapper *et al*. (1996) have suggested a new classification of performance measures involving three intrinsic dimensions, that is, decision type, aggregation level, and measurement unit. Decision type focuses on the kind of decision the performance measure is meant to support like strategic, tactical or operational. Aggregation level is to work out if the performance measure is of overall or partial nature. Measurement unit relates to which unit the measure is expressed in, whether monetary, physical or dimensionless.

3.7.1 Types of Performance Measures

PM is often referred to as the use of a multi-dimensional set of performance measures (Neely *et al*., 2003). It is only relevant within a reference framework against which the efficiency and effectiveness of action can be judged. Hudson *et al*. (2001) propose six types of performance measures that can be seen to cover all aspects of business: quality, time, flexibility, finance, customer satisfaction and human resources, as shown Figure 3.3.

Time, quality and flexibility provide the financial results and the operating performance. Customer satisfaction provides an insight into the way the company is perceived externally, whilst the human resource dimension offers managers the ability to evaluate the cultural aspects of the working environment. These dimensions are not prescriptive, and they are intended to encourage the holistic consideration of these areas when developing performance measures to support the organisation's strategies.

Quality	Time	Flexibility
• Product performance • Delivery reliability • Waste • Dependability • Innovation	• Lead time • Delivery reliability • Process throughput time • Process time • Productivity • Cycle time • Delivery speed • Labour efficiency • Resource utilisation	• Manufacturing effectiveness • Resource utilisation • Volume flexibility • New product introduction • Computer systems • Future growth • Product innovation

(Kaplan, 1983; Lynch and Cross, 1991; Schmenner and Vollmann, 1994; Neely *et al*., 1995; Collier, 1995; White, 1996; Laitinen, 1996; Slack *et al*., 1998; Medori and Steeple, 2000)

Finance	Customer Satisfaction	Human Resources
• Cash flow • Market share • Overhead cost reduction • Inventory performance • Cost control • Sales • Profitability • Efficiency • Product cost reduction	• Market share • Service • Image • Integration with customers • Competitiveness • Innovation • Delivery reliability	• Employee relationships • Employee involvement • Workforce • Employee skills • Learning • Labour efficiency • Quality of work life • Resource utilisation • Productivity

(Keegan *et al*., 1989; Sink and Tuttle, 1989; Eccles, 1991; Kaplan and Norton, 1992; Jones *et al*., 1993; Meyer, 1994; Bitici, 1994; Fitzgerald and Moon, 1996; Ghalayini *et al*., 1997)

Figure 3.3: Critical Dimensions of Performance
(Source: Adapted from Hudson et al., 2001)

There are various types of performance measures that have been proposed and published, as shown in Figure 3.3. They are generally concerned with quality, productivity, efficiency and effectiveness (Harper, 1984; Sink and Tuttle, 1989; Brown *et al.,* 1994; Coetzee, 1998; Hudson *et al*., 2001). Considerations about the human resources, namely customer, employee (Kaplan and Norton, 1992; Cupello, 1994; Brown *et al*., 1994; Wordsworth, 2001; Neely, 2002; Atkins and Brooks, 2006) and also supplier (Cupello, 1994) are also indicated. Interestingly, two classifications highlight that measurement must also be considered from the perspectives of public and communities' responsibility (Brown *et al*., 1994) and regulators and investors (Neely, 2002).

Many authors also emphasise the performance of equipment and task (Kaplan and Norton, 1992; Campbell, 1995; Wordsworth, 2001) and cost (Harper, 1984; Campbell, 1995; Coetzee, 1998; Wordsworth, 2001). Tangen (2003) introduces

financial and non-financial performance measures. The examples of financial performance measures are profit margin, return on asset and return on equity. However, very few authors believe that innovation and learning and growth (Sink and Tuttle, 1989; Kaplan and Norton, 1992; Wordsworth, 2001; Atkins and Brooks, 2006) are among the critical dimensions in measuring performance.

What particular performance measures to use is a complex task, which is not being made any easier as the number and type of performance measures available continues to grow. Instead of searching for a perfect set of performance measures that is applicable to all situations, the best alternative would be to explore in what situations the frequently used performance measures are appropriate (Tangen, 2003). The classification sets shown in Figure 3.4 can be a good reference to the types of performance measures that have been established and that are available to be used.

Harper (1984)	***Sink and Tuttle (1989)***	***Kaplan and Norton (1992)***	***Cupello (1994)***
• Productivity • Unit cost • Price • Factor proportion • Cost proportion • Product mix • Input Allocation	• Profitability • Productivity • Innovation • Quality of work life • Quality • Effectiveness • Efficiency	• Financial • Customer • Internal Processes • Innovation & Learning	• Customer satisfaction • Employee satisfaction • Project performance • Supplier performance
Brown et al. (1994)	***Campbell (1995)***	***Coetzee (1998)***	***Hudson et al. (2001)***
• Customer and employee satisfaction • Financial • Product/service quality • Operational • Public responsibility	• Equipment performance • Cost performance • Process equipment	• Maintenance/FM Efficiency • Task Efficiency • Organisational efficiency • Profit/Cost Efficiency	• Quality • Time • Flexibility • Finance • Customer satisfaction • Human Resources
Wordsworth (2001)	***Neely (2002)***	***Tangen (2003)***	***Atkins and Brooks (2006)***
• Learning and growth • Equipment • Task • Cost • Immediate customer	• Customers • Employees • Supplies • Regulators and communities • Investors	• Financial: Profit margin Return on assets Return on equity • Non-financial	• Operational • Financial • Innovation • Customers

Figure 3.4: Types of performance measures proposed by various authors

A simple but effective approach, which is based on the Performance Value Model, was introduced by Nutt and McLennan (2000). The model is derived from the Total Quality Management (TQM) model, fused with the basic principles of project management with the focus on three key elements of cost, time/use and quality. The performance metric cost refers to the cost of the workplace facilities and building services. Time/Use metrics refer to how efficiently the building space is being used over time. These key metrics can be facilitated by analysing the space utilisation to ensure space efficiency and allow the flexibility required in the organisation. The Quality metric refers to how well the office meets its intended purpose, for instance, to support work activities and enhance work performance. The authors also suggested that all the three performance metrics could be benchmarked with other buildings. The comparison will ascertain the performance level of an organisation in offering the best value service.

3.7.2 Financial and Non-financial Performance Measures

Any measurement regime should be designed to meet specific needs and should be built from a variety of measurement types that, together, offer the data that will be useful in monitoring performance and taking appropriate action. Several frameworks have been developed for measuring performance over the years. Parida and Kumar (2006) claim that since 1980 until to-date, the practitioners have mostly implemented financial performance measures. Traditional ways of measuring performance with financial and productivity performance measures have a number of shortcomings, principally the absence of a link to company strategy and the risk of sub-optimisation. However, these performance measures should not be automatically rejected as they also have a number of advantages. They are precise, objective and can form the basis of a low-cost measurement regime. Their limitations suggest that they should be used in combination with non-cost measures.

During the last decade, many researchers have focused on developing more complex PMS, as the cost accounting system will not entirely solve the problem with financial performance measures; other types of performance measures are needed to gauge performance. PMSs that incorporate both cost and non-cost performance objectives are signified to be more suitable for the business environment today (Atkin and Brooks, 2006; Kaplan and Norton, 1992). To focus primarily on one type of performance measures will often result in sub-optimisation. A varied set of measures will give a more correct and certainly more balanced view of a company's

performance (Tangen, 2003). Subsequently, various researchers have developed frameworks considering non-financial measurements and intangible assets in order to achieve competitive advantages (Kaplan and Norton, 1992).

There is no completely unambiguous way to know when a company is profitable, since many business opportunities involve sacrificing current and future profits (Ross *et al*., 1993). In the financial measure, Tangen (2003) has introduced three common aspects: profit margin, return on asset and return on equity. Profit margin or return sales measures how much a company earns relative to its sales. These measures determine the company's ability to withstand competition and adverse rising costs, falling prices or declining sales in the future (Ross *et al*., 1993); while return on assets (ROA), as developed by Dupont in 1919, is one of the most widely used financial models for PM (Zairi, 1994). It determines the company's ability to utilise its assets, but it does not tell how well a company is performing for the stockholder. Lastly, return on equity (ROE) measures how well the company is doing for investors like the stockholders, since it tells how much income they are getting for their investments.

Many researchers argue that there are significant limitations to financial performance measures, since they are based on a simple cost accounting system that was common in the early 1900s. Such a system focuses on controlling and reducing direct labour costs and therefore cannot adapt to today's competitive environment. Cost accounting systems were designed for an environment of mass production of a few standardised items, which makes them more or less inadequate in a manufacturing environment that includes new philosophies such as lean production, agile manufacturing or mass customisation. However, while the climate for manufacturing companies has changed enormously, the techniques of management accounting have changed very little.

As for the manufacturing industry, the financial performance measure has a limitation where there is a lack of relevance to the control of production and it is not directly related to manufacturing strategy (Maskell, 1991). Excessive use of return of investment ROI also distorts strategy building (Hill, 1995). Traditional criteria such as cost efficiency and utilisation may pressure managers and supervisors into maximising short-term results, and therefore discourage improvements (Crawford and Cox, 1990). Ghalayini *et al*. (1997) have suggested that many improvements are difficult to quantify directly in monetary value, such as lead-time reduction. Most

financial performance measures also have a predetermined inflexible format that is used across all departments, ignoring the fact that most departments have their own unique characteristics and priorities (Maskell, 1991). This also makes them not applicable to the new management techniques that give shop-floor operators a responsibility and autonomy (Ghalayini *et al*., 1997). Bititci (1994) also believes that this type of measure does not adequately identify the cost of quality. However, many manufacturing companies are still primarily relying on traditional cost-related performance measures focusing on the ROI, profit margin and cash flow in spite of the limitations of financial measures (Tangen, 2003). Even an improved cost accounting system will not entirely solve the problem with financial measures; other measures than cost are needed to adequately gauge manufacturing performance relative to a competitive strategy (White, 1996).

The use of non-cost performance measures has increased due to the pressure of an increasingly global economy and a business environment characterised by complexity, competition, change and uncertainty (Tangen, 2003). The non-cost performance measures are the types of performance measures that are based on performance objectives, namely perceptions or opinions, benchmarking with other organisations, or input and outcome of some process (White, 1996).

3.7.3 Traditional Productivity Performance Measures

Tangen (2003) classifies partial productivity measures and total productivity performance measures as the two types of index productivity performance measures. Partial productivity performance measures concern the ratios of output to one source of input, such as labour, capital, material or energy. One example of a common performance measure is the labour productivity, i.e., output per working hour or output per employee. This type of performance measure is simple to understand and measure in reality. Therefore, it can detect improvements and the reasons behind them more easily than can broader performance measures. The needed data are usually easy to obtain and partial productivity indices are not difficult to calculate (Sumanth, 1994). It also proves very useful in feedback of performance to the workers since these data are easy to understand and workers want to know how they are doing (Bernolak, 1997).

However, Suh (1990) argues that labour productivity is becoming a useless performance measure in modern manufacturing operations since the total direct

labour cost is becoming a smaller fraction of the total manufacturing costs. It only considers one production factor, which in turn is often decided on interplay with the use of the other production factors like capital, energy and primary products. One example of this problem is called capital-labour substitution, which means that the labour productivity can be improved at the cost of capital, resulting in decreases in the total productivity. This way, the partial productivity performance measures tend to overstate the increase in productivity (Grossman, 1993). Sumanth (1994) also believes that the performance measures do not have the ability to explain overall cost increases, and can be very misleading if they are used alone. On the other hand, the total productivity performance measure looks at the ratios of total output to the sum of all input factors (Tangen, 2003). It provides a comparably good picture of the overall productivity of a process or a company. However, it is more difficult to understand than to measure, unless the production factors are weighed accordingly (Grossman, 1993).

3.7.4 Time-based Productivity Performance Measures

Time is a common measure that is used for measurement as it can be used to measure productivity (Arnold, 1991). Time-based productivity performance measure is a ratio between value-adding time and total time (Jackson and Petersson, 1999). The performance measure is claimed to be easy to determine and also easy to understand. It also facilitates comparisons between countries where there are a variety of currencies. As in operative manufacturing, there is approximately a linear relationship between time and cost. According to Jackson and Petersson (1999), time-based productivity element does not provide information about the consumed resources in the production process. Therefore, it is questionable if a completely time-based measure can be classified as a performance measure. PM cannot be done in isolation and it has an impact on the environment in which it operates (Neely *et al*., 2003). The measurement process, targets and results influence the individual or groups within the organisation, and therefore the selection of suitable and appropriate performance measures is important to ascertain an enhanced service in a balanced environment.

3.8 Chapter Summary

This chapter has provided an overview of the elements that constitute a good PMS. The study on a set of existing PMS has shown that there are both advantages and disadvantages of the models respectively. It was also concluded although the models are generally detailed and comprehensive, they were designed to meet the objective and criteria of FM services. The overview of the principles of PM and PMS in this section can be further linked with its implementation in FM in the next chapter. In chapter 4, the principles and theories of PM are further explored within the FM context. Focus on the previous PM models and frameworks for FM are also presented to understand their scopes and approaches.

CHAPTER 4: PERFORMANCE MEASUREMENT (PM) IN FACILITIES MANAGEMENT (FM)

This chapter draws the link between PM and FM, the two scopes which have also been covered in the earlier chapters. A few models from previous studies are introduced, to give an overview of the PM models that have been established in FM services. A variety of performance measures types and implementation is also studied, so specific focuses on the FM management and operation services can be achieved.

4.1 Introduction

In 1998, Cotts defined FM as a managerial practice that integrates the principles of business administration, architecture, and the behavioural and engineering sciences to ensure effectiveness of all these procedures. It exists to support the core business that is the preliminary goal-seeking activity of the enterprise (Amaratunga, 2000). She further suggests that the role of FM in facilitating organisational performance, and thereby in providing competitive advantage, is widely acknowledged. FM is gaining increasing importance in the sector of business process outsourcing. However, stemming from the practitioners' experience, there is a lack of a significant theoretical foundation based on empirical evidence about PM (De Toni *et al*., 2007). FM encompasses a vast spectrum of perspectives about people, organisations and change processes to enhance the value of any organisation (Amaratunga and Baldry, 2000).

One essential aspect of FM other than the emphasis of the technical operation is its performance (Myeda and Pitt, 2013). FM also requires a multi-skill approach and functions to concentrate on the area of interface between physical workplace and people (Barret, 1994). PM indicates where the organisation is heading; therefore, it is also perceived as the language of process for an organisation (Rose, 1995). It functions as a guide to whether the organisation is en route to achieving its goals. Additionally, Kamaruzzaman et al. (2013) believe that, by measuring the service performance, the FM managers would be able to comprehend the strengths, weaknesses and also significance of the services provided, and also understand both the tangible and intangible values of the buildings.

Clearly the basis of PM is that unless a score is kept it is difficult to know whether the approach works or not (Hatry, 1978). Ahmad (2008) affirms that building services' assessment and condition monitoring needs to be carried out in order to determine the status of services provided to the users. It is also seen as a key management activity, which provides decision makers with information necessary for decision-making, monitoring performance and effective allocation of resources (Webster and Hung, 1994).

Performance relates to a building's ability to contribute to fulfilling the functions of its intended use (Williams, 1993). In order for PM to function effectively, the emphasis must be given to the organisation, process and also job or performer itself (Rummler and Brache, 1995). However, Pintelon and Van Puyvelde (1997) argue that for service operation the performance will depend on the perspective applied; for instance, accountants will think of maintenance in terms of costs, top management often is only interested in budget performance, engineers will focus on techniques, production will see performance in terms of equipment availability and support responsiveness. Despite the different perspectives among the management personnel and officers involved, it is observed that companies using an integrated balanced PMS perform better than those that do not measure their performance (Kennerly and Neely, 2003; Lingle and Schiemann, 1996). Amaratunga (2000) claims that the step towards better management of facilities is set to continue as the management of buildings by organisations continues to become more sophisticated.

FM is a complex area, bringing together services related to asset management, building operations, maintenance and business support services (Kadefors, 2008). Since the 1980s, FM has gradually gained a foothold as a discipline and profession within the property and construction industry (Ventovuori *et al*., 2007). While some FM literature suggests that FM should be a strategic function with a connection to strategic objectives of core business (Bon *et al*., 1998; Barret, 2000), it is commonly accepted that FM has a strong tendency to be technically oriented and reactive (Barret, 2000). Grimshaw (1999) has proposed that FM is based on three paradoxes. First, FM professes to be a strategic discipline when it is clear that most of its practitioners are situated at an operational level in their respective organisations. Second, FM professes to want to be at the heart of organisational development when clearly many FM services are delivered either by external consultants or in-house teams set up as internal consultants. Third, FM professes to be proactive in managing change within organisations when quite clearly it is

reactive in most cases. FM profession has progressed from being a narrowly defined set of functional tasks delivered in a mechanistic manner to meet a specific requirement, to an integrated management approach (Pathirage *et al*., 2008). This also signifies its role as a significant determinant of corporate goal achievement (Pitt, 2005). The main focus of FM has for a long time been on cost reductions, but in recent years there has been a significant change towards the need for FM to create added value (Jensen, 2010). According to Jensen, adding value is seen as a contrast to pure cost reductions, but the relationship between value and cost is complex. The added value can be defined as the value of the product reduced by the value of the resources used during the process. Reducing cost by increasing efficiency leads to added exchange value. Meanwhile, use value relates to the output and possibly the outcome of a process but does not concern the process as such. For both exchange value and use value, he added that value is a relative concept, which refers to a change over time.

FM can be strategic in managing business support functions and operational, concentrating on the detailed operational activities of the organisation (Baharum and Pitt, 2009). It also embraces every part of an organisation's activities, and can be seen as a series of inter-related activities involving the co-ordination of all efforts relating to planning, designing and managing an organisation's physical resources (Becker, 1990). Facilities represent a substantial percentage of most organisations' assets and their operating costs; thus it is hardly surprising that performance appraisal in FM is becoming a formal and regular part of the FM process (Amaratunga and Baldry, 2000). Much work has been done to measure FM performance, but it often ignores the influences of erratic patterns of reinvestment in building fabric and components which can add as much as 25 per cent to the cost of running a building (Kincaid, 1994).

4.2 PM Literature

PM literature is deficient in addressing the properties of an effective PM development process (Hudson *et al*., 2001). Although PM is often discussed, the mechanisms of how PM happens in FM are unclear as researchers in the FM field have yet to investigate the concepts of PM that are well developed in other fields, nor do they take into account the complexities of PM at the FM organisational level (Amaratunga, 2000). Amaratunga further suggests that, although the literature on

PM is vast, very little of it provides concrete evidence that the concepts are operational in the real world, specifically in disciplines such as FM.

Also according to Amaratunga (2000), PM in FM is a less developed area in literature and few data are available to assess how extensively the use of PM techniques has been diffused, what factors have influenced their diffusion and how the factors affect the overall organisational performance, as only a few authors put forward such application. A review of FM literature over recent years also indicates a trend towards PM, particularly for strategic development. Although a few authors have used some measures to assess their performance for a long time, such measures often fail to be integrated indicators in a fully-fledged measurement process (De Toni *et al*., 2007). FM researchers do not use the concepts of PM, for example, the business performance theories, in as rigorous a manner (Amaratunga, 2000). Most literature on PM suggests that an effective PMS should be able to recognise different performance hierarchies and multiple dimensions of performance measures, relate the measures to the relevant goals and link them to strategy, address cross-functional issues, involve subjective measures as well as objective ones, involve employees to ensure that it gets their support and, finally, present a balanced view of the system (Myeda et al., 2011a)

Study of PM in the FM setting is superficial as researchers make no use of more general discussions of performance measures, for example, the usefulness of constructing a PM framework for FM, or to add PM into models of the FM process in the same way that they implement the project management techniques (Amaratunga, 2000). Amaratunga further suggests that there is only a limited number of empirical studies available on this topic.

4.3 Performance

Performance in the instance of Key Performance Indicators (KPI) is categorised as an explicit knowledge that is used as a tool for knowledge transfer which is related to the FM strategic process (Fong and Dettwiler, 2009). According to Kadefors (2008), KPIs are included in the FM contract awarded to the supplier. The need to establish KPIs for FM has been well recognised for more than a decade (Hinks and McNay, 1999). Measurement is still one of the critical aspects of today's management, as it has been in the past, being a key aspect of scientific development since the seventeenth century. The concept of PM has been

embraced by FM managers and project managers, who increasingly use it as a benchmark against which effectiveness can be measured, and a basis for which improvement can be determined (Enoma and Allen, 2007).

PM is not an easy task, especially when relating it to FM functions. There is a need to develop indicators for performance measures because FM functions are not measurable. These indicators, for example, will help in assessing the performance in the areas of safety and security (Enoma and Allen, 2007). Benchmarking is essentially a cost reduction method and, according to McDougall and Hinks (2000), its application in FM performance criteria is now apparent within large organisations. They also state that the ease of acquiring and interpreting information appears to be one of the characteristics of FM benchmarking which directly conflicts with the academic push to widen the scope of benchmarking into concerns like customer satisfaction and service standards. Benchmarking also provides a powerful combination of tools that can allow any organisation to identify areas where performance could be improved (Enoma and Allen, 2007). The need for continuous improvement is the core development, which requires a very clear picture of how things stand today. According to Kouzmin *et al.* (1999), due to the relative early stages of the introduction of benchmarking into the public sector, its acceptance is welcomed with scepticism, and experienced many anti-organisational change elements within the workplace resisting every effort towards the benchmarking process. They further suggest that managers can use benchmarking as a management strategy to measure performance, and also to evaluate, budget, motivate, control, learn, improve, promote and plan. Therefore, managers should think about the managerial purposes to which PM relates and how they might be used before selecting the measures with appropriate characteristics to help achieve each purpose.

Benchmarking can also have its own drawback and, according to Synnestvedt (2001), there are a few barriers in performance benchmarking, including the fact that data or information exists in a number of guises; not all relevant information exists; the language is often technical; there can be measurement problems; there are statistical lags; the available information can often be hard to verify; and the format of the information might make comparison very difficult.

PM in relation to the delivery of an effective service will involve delivery that is timely and orderly to eliminate non-value adding activity in FM. The result of PM will

indicate how well the organisation is doing against predetermined goals, assess the strengths and weakness of the organisation and help in establishing standards (Enoma and Allen, 2007). When measurements are involved, a lot can be learnt from operational services or cost centres, functional use of space, financial performance and other performance. Performance indicators can help inform the resource allocation decisions, when used to direct resources to the most successful activities, thereby enhancing efficient use of resources (Enoma and Allen, 2007). They can also provide means of improving programmes by learning from success and improving the performance of the programme. Neely *et al.* (1995) suggest that managers find it easy to decide on what to measure when looking at PM from the dimensions of cost, quality and time. Once implemented, PM has to be applied both inside and outside the organisation. Enoma and Allen (2007) signify that, to date, PM has been used to monitor past performance and laggard indicators and to stimulate future action.

4.4 Quality of Services Delivered

The standard at which an organisation believes it is delivering FM services can often be distinctly different from the perceptions of the customers or users receiving the services. In this context, performance specifications can allow services to be better adapted to needs, and to require less work upfront for specifying processes in detail (Kadefors, 2008).

Moss *et al*. (2007) propose that one of the key problems in measuring FM performance is that some KPIs do not help to improve the services. Carder (1997) suggests that as the FM discipline gains maturity it must take on greater responsibility, particularly in leading business towards a greater understanding of the contribution of non-core elements to an organisation's overall success. He also describes this as interface management with the underlying concept of understanding and managing the interface between an organisation's core business and its physical working environment.

Jensen (2010) suggests that, if FM is going to survive as a discipline, it is important to develop the field from not only being able to provide the same services as before at a lower cost but also to deliver qualitatively better services to their clients, customers and end users. Anderson and McAdam (2004) suggest that the focus of

PM has also changed where the traditional PMS has improved to innovative PMS, as shown in Table 4.1.

Traditional PMS	***Innovative PMS***
• *Based on cost/efficiency*	• *Value based*
• *Trade-off between performances*	• *Performance compatibility*
• *Profit-oriented*	• *Customer oriented*
• *Short-term orientation*	• *Long-term orientation*
• *Prevalence of individual measures*	• *Prevalence of team measures*
• *Prevalence of functional measures*	• *Prevalence of transversal measures*
• *Comparison with standard*	• *Improvement monitoring*
• *Aim at evaluating*	• *Aim at evaluating and involving*

Table 4.1: Main changes and trends in the development of PMS

(Source: Anderson and McAdam, 2004)

Functional performance of a property is believed to be the greatest influence on the organisation's core objectives, which accounts for 80 to 90 per cent of its total costs (Loosemore and Hsin, 2001). PM helps managers and operators to determine those issues that are crucially important to the overall organisation and its success, and also issues pertaining to the successful delivery of the specific function or operations concerned (Varcoe, 1996). The benefits of PM lie in their measurability and the fact that the performance levels are derived from objectives. Carder (1997) suggests that, if the workplace infrastructure like buildings, locations, IT and transport are managed and measured effectively, they can contribute to the organisation by improving operational capacity and cost effectiveness.

4.5 The Lack of PM practice in FM

Amaratunga (2000) points out that there is a lack of a systematic process for determining appropriate measurements. An exploratory approach to the area of PM in FM organisations was the preferred approach as the problem of lack of construct validity is general rather than specific (Amaratunga, 2000). The non-existence of such validation or feedback and evaluation mechanism within academic research has been identified as the 'fundamental missing link' for researchers, research users and funders (Lorch, 2000).

Amaratunga (2000) also believes that there is a need to determine, verify and integrate the axioms of modern PM in the context of FM. There is also a need to provide a better understanding of PM in FM. For example, although the area of PM is not new, the constructs are neither well-established nor standardised across and even within FM disciplines, giving an abundance of areas for investigation.

Specific research on the application of customer satisfaction indicators as a strategic PM process within FM is also insufficiently documented (Tucker and Pitt, 2009). The significance of customer satisfaction responses is also seconded by Myeda *et al.* (2012), where customers would give the most accurate results and perceptions from the end users' points of view. Increased customer satisfaction generates positive reviews and brings in new customers to the firm.
Most research in FM focuses on the role of the corporate real estate function, outsourcing decisions or more general management issues (Kadefors, 2008). Previous studies in performance tend to measure profitability, economics and environmental issues and, recently, issues on sustainability, but there is a lack of studies that focus on performance purely from the FM perspective (Enoma and Allen, 2007). There is a causal link between FM practices and performance, prompting the evaluation researchers to question whether performance evaluation does in fact add value and enhance organisational performance (Amaratunga and Baldry, 2000).

There are very few studies that deal with what constitutes effectiveness in either the facilities or FM. The well-documented shift towards customer satisfaction and quality as organisational priorities is perhaps still unclear in its translation to the FM context. Managers may need to take a wider look at the stakeholders of an organisation, and their various priorities, for a richer understanding of these ambiguous concepts (McDougall and Hinks, 2000).

There are also limited KPIs that can be used in FM; the frameworks tested based on the measures from other indicators are too general for FM service specification (Enoma and Allen, 2007). Little has been researched in the areas of PM in domestic service in healthcare organisations, and there is evidence of a lack of common understanding of what is meant by performance, or how performance could be measured in FM practice (Liyanage and Egbu, 2008). In spite of the increasing importance of PM in operations management, De Toni and Tonchia (2001) believe

that very few empirical studies concern models; and, in order to make the very best of the system, they have proposed integration and formalisation with the organisation's system being emphasised, while at the same time creating greater space for human resource considerations.

However, an absence of a robust PM approach could be the main reason for the lack of a comprehensive set of performance indicators and measures in domestic services. It is also understood that there is uncertainty over the meaning and implications of PM in domestic services (Liyanage and Egbu, 2008). This signifies the need to have a framework for demonstrating how performances are operationalised within domestic services and in the FM service as a whole.

4.6 The Rationale in Measuring FM Performance

The growing acceptance of a need to measure FM performance is in contrast with a lack of a systematic process for determining appropriate measures (Amaratunga, 2000). The need for measurement as a valid management tool is to enable good planning and control; management of change; communications; continuous improvement; resource allocation; motivation; and long-term focus (Sinclair and Zairi, 1995). It also helps FM managers to understand where they are heading and what their targets are in order to achieve an optimum FM service delivery (Rose, 1995). There is also a strong correlation between performance and satisfaction, and a building must be allowed to be benchmarked against others so that its relative performance can be assessed (Nutt *et al*., 2000). FM also focuses on constant evaluation of performance to guide management decisions and indeed enhance innovative quality delivery that is cost effective (Myeda and Pitt, 2013). Kamaruzzaman *et al*. (2013) have signified the importance of PM in measuring the FM services. They believe that maintenance managers tend to carry out reactive maintenance works as opposed to preventive works and at times do not consider the clients' satisfaction and the service performance. There is a concern related to unprofessional practice by the FM managers which can be overcome by incorporating PM in their service.

According to Amaratunga (2000), PM in FM is perceived in two ways: as a critical success factor in the strategic development process and as a learning process within the FM organisation. In the learning process, the FM organisation aligns itself with its environment by obtaining information, either from the marketplace or through

the generation of scientific knowledge and the subsequent applications of this in organisational development process. This indicates that the measurement of FM will help to exercise the strategic development process and enhance the learning process in an organisation.

Atkinson *et al.* (1997) state that PM serves three basic functions, which are to co-ordinate, to monitor and to diagnose a performance of a service. Through these functions, PM if implemented and used properly can actually change the lives of people and organisations. Similarly, Cupello (1994) looks at performance hierarchies for different performance measures and provides four reasons why organisations need to conduct measurement, which are for planning, screening, control and diagnosing. Planning measures, which are the responsibility of top management, are measures that address issues related to whether the organisation is achieving its strategic plan. Screening measures, on the other hand, are targeted at measuring whether the functional areas of the organisation are in support of the organisation's strategic plan. These measures are the responsibility of the middle management. The performances of individual employees, machines, products, services and processes are classified as control measures. The purpose of diagnostic measures is to determine whether the organisation's quality initiatives are achieving the desired result. The types of performance measures that come under this category are customer satisfaction measures, employee satisfaction measures, project performance measures and supplier performance measures.

Owners and clients have started to forget the main reason why a supplier's performance shall be measured (Moss *et al*., 2007). The importance of gathering service delivery data from the customer perspective is expressed by Tucker and Smith (2008), where perceptions of the users about the initial input of the service delivery process are important as they essentially determine the strategic and operational objectives of the organisation.

4.7 FM Performance must be measured

Over the past few decades, the complex global business environment and increasing business competitiveness have highlighted the importance of PM (Yang *et al*., 2010). Performance methods have been widely adopted in many industries and they have received more and more attention (Niven, 2002). People in industry have started to recognise the benefits of PM in determining how successful the

organisations or individuals are in attaining their objectives Bititci *et al.* (1997). The main purpose of PM is to measure and improve the efficiency and the quality of the performance, and identify opportunities for progressive improvements in performance (Wegelius-Lehtoneen, 2001). Pillai *et al.* (2002) believe that PM can help evaluate the overall performance of a project at any point of time during its life cycle. Luu *et al.* (2008) suggest that PM can help firms identify their strategies, quantify their strategic performance, and improve their competitive advantage. Amaratunga and Baldry (2002) propose that PM could generate results about what had happened but not why and what to do about it.

Tucker and Pitt (2009) propose that the FM service delivery performance needs to be measured to ensure added value is being achieved. Amaratunga and Baldry (2003) have proposed that the added value of FM should be managed efficiently so that the benefits can be maximised. Tolman and Parkkila (2009) believe that healthy performance of facilities is essential for the occupants. 'Healthy buildings' in this context refers to buildings with good indoor air quality. They further observe that the aspects of healthy buildings have attracted interest over the past decades from multidisciplinary scientific communities.

According to Tolman and Parkkila (2009), performance compliance to the requirements during the whole post-occupancy period is also essential to the provision of healthy spaces. They further state that, in order for any measurement and evaluation to be truly meaningful, these should refer to explicit requirement levels against which they can be judged. The performance of a building has some physical factors that serve as principal indicators. For condition monitoring, for instance, temperature and humidity are key indicators, and are also major factors for performance evaluation. In the use phase, maintenance and energy consumption are the main cost components and directly relate to user comfort and services. In all, the way to quantify performance is to measure performance indicators.

Generally, a provision for PM framework in FM will benefit both client and the business management, taking into account the participation of the organisation's related departments to form agreed goals and indicators to enhance the service delivery. It is important to clarify the distinctive features of the FM and focus on the specific roles of FM in managing resources, environment and services to provide logistics support to the operations of organisations, and also contribute to the success of the core business (Nutt, 1999).

All these principles in determining the success of FM service delivery must be linked to the PM. FM performance must be considered in relation to the outcomes rather than the outputs of core business success (Price, 2002). The definition of PM is reflected in how the company manages its performance. Bititci *et al.* (1997) believe that it should be in line with the organisation's corporate and functional strategies and objectives. The strategic approach of PM is by deriving the performance measures from the corporate strategies (Neely *et al*., 2003). PM aims to assess the performance in order to guide management decision-making and also to act as a driver to enhance the innovation and quality of an organisation's service delivery. The key determinant in achieving effective PM is to view FM strategically, where FM is aligned to support the core objectives of the organisation (Pitt and Tucker, 2008). The selected performance measures must be appropriate in relation to the strategic goals of the organisation (Wordsworth, 2001), and targeted to improve the service delivery standard.

4.8 PM Models in FM

Tucker and Pitt (2009) have developed the Customer Performance Measurement System (CPMS), which was designed by taking into account the significance of customer perceptions in delivering quality services. The system comprises generic satisfaction benchmarks for FM, which FM companies can implement when measuring their performance. This study also looked at the efficiency and the criticality levels of the FM services provided. This system is also similar to the GAPS model, which emphasised the significance of end users' expectations and perceptions and the gaps that exist between the two elements (Parasuraman, 2004). Moss *et al*. (2007) have also developed a Quality Managed Facilities (QMF) framework that was adopted from Alexander (2002). This model outlines the business drivers necessary to produce both tangible and intangible FM outputs.

Liyanage and Egbu (2008) have proposed a Performance Management Framework (PMF) that specifically focuses on the control of Healthcare Associated Infections (HAI) in FM. It considers a set of predetermined indicators to assess the performance of control of HAI in domestic services. The proposed PMF also integrates the performance goals and indicators with other hierarchical levels, namely departmental, hospital, trust/board and national level. This way, everyone knows where FM is going as there is a clear focus on goals and priorities. This level

of clarity helps to correctly direct resources, which means there are fewer instances of resource limitations. As the emphasis of a PMF is on meeting the set goals, indicators and measures, it is easier to monitor the progress of the services and to take appropriate corrective actions if and where necessary. Carder (1997) has proposed a model that was developed on the basis of a process and holistic systems approach, and which uses the PM concept of the balanced scorecard. The model outlines the performance pyramid linking the input to the balanced business outputs from the four aspects, namely financial, customer, internal and organisational development. The rationale of the pyramid model is that it can plot the business outputs against the inputs - which are the workplace factors that are considered to have the greatest impact on the business value-chain.

Hinks and McNay (1999) have developed a set of KPIs for measuring the FM function of a financial service company by a process called 'management by variance', which is based on performance trend monitoring and analysis. However, in their study there were no general performance indicators for FM function, and there was the need to clarify and prioritise indicators that correlated the views of the customers and goals of the study (Enoma and Allen, 2007). Behn (2003) suggests that managers may find performance measures or KPIs helpful in achieving specific managerial purposes. However, looking at the challenges of the functional performance of the facility and the organisational objectives, Valins and Slater (1996) express the difficulty that exists with measuring the impact of buildings upon the emotions, attitudes, behaviour and both performance levels and satisfaction of those who use them. KPIs in FM can be related to cost of operation, maintaining and running a facility, revenue generated space usage and management, environmental, and health and safety issues (Enoma and Allen, 2007). Financial performance measures and indicators have been the main measure of corporate performance over a number of years, possibly because they are widely accepted and easy to use and understand. However, in FM the use of only financial indicators is not only insufficient but it is also outdated and the emphasis on profit will not be helpful, without a corresponding increase in efficiency and effectiveness in employing the relevant resources to create very high levels of services for customers (Enoma and Allen, 2007).

There are a few approaches that can be applied in identifying the right indicators, for instance, Amaratunga and Baldry (2003) examine the practice of PM in FM by looking into the advantages and disadvantages in the current PMSs in order to

develop a conceptual framework; while Brackerts and Kenley (2002) have applied a holistic model to provide an appropriate measures of FM which included both financial and non-financial performance indicators. Finch (2002) has explored the significant value of effectiveness and how it can be derived from a network device in relation to performance indicators.

PM should be a means to manage and improve performance and it has to prove the FM contribution to an organisation's core business by delivering quality, and cost-effective and user-satisfied services (Moss *et al*., 2007). Therefore, a powerful FM tool needs to be able to handle the collection of a massive amount of data and its communication as information to the FM manager or other actors involved in facilities' use and maintenance (Tolman and Parkkila, 2009). The process of PM is usually determined by the metric of a number of indicators, which include both financial and non-financial performance indicators (Yang *et al*., 2010). A PM framework is a complete set of performance measures and indicators derived in a consistent manner according to a prior set of rules or guidelines (Brown and Devlin, 1997). The frameworks help to measure whether the functions and departments are doing the right thing and whether they are doing them well (Lynch and Cross, 1991). With the development of PM, the frameworks have become more and more comprehensive and practicable (Yang *et al*., 2010). Haapasolo *et al*. (2006) argue that one purpose for establishing frameworks is to check whether the strategy is realistic overall and what kinds of goals should be used on a daily basis in order to reach long-term goals. In this respect, the indicators can also be considered as one of the ultimate goals.

Many frameworks are established to evaluate and compare the performance of projects, organisations and stakeholders (Yang *et al*., 2010). All measurements must relate physical, functional and financial attributes on the one hand and also consider customer satisfaction, flexibility and productivity on the other (Enoma and Allen, 2007). Varcoe (1993) has suggested that FM performance criteria must be based on cost, quality and delivery. Punniyamoorthy and Murali (2008) have improvised the Balanced Scorecard Model, which was first introduced by Kaplan and Norton (1992), where performance from the internal process perspective has to be derived from "What must we excel at", as shown in Figure 4.1.

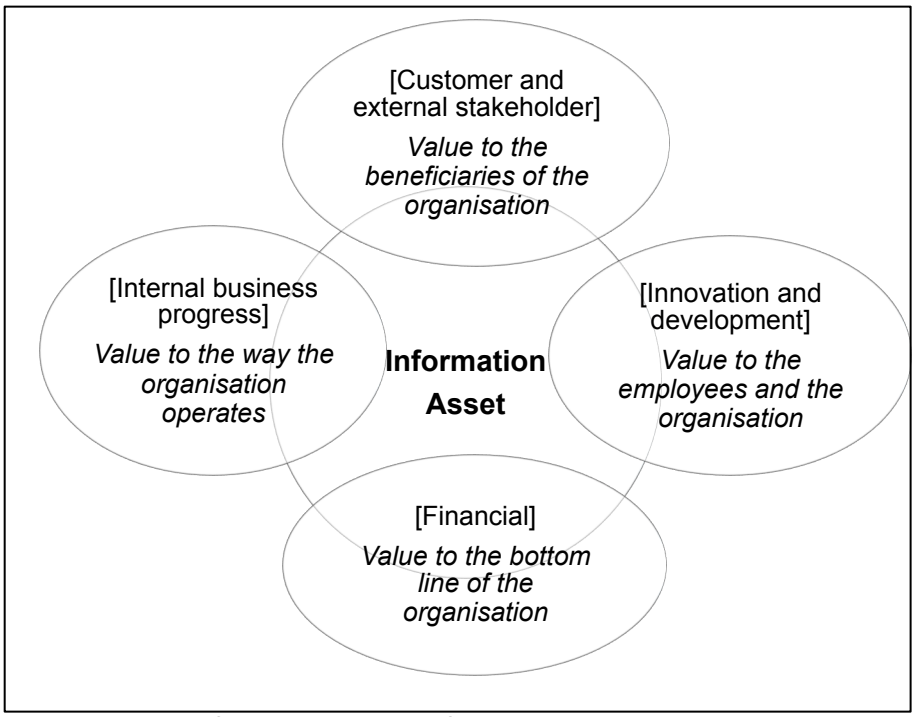


Figure 4.1: The four dimensions of the balanced scorecard model

(Source: Punniyamoorthy and Murali, 2008)

According to Punniyamoorthy and Muralli (2008), there are four elements of values that need to be emphasised when considering the information asset. For innovation and development, an organisation needs to study and understand the value that the employees and the organisation itself are gaining from the assets. As for the financial element, the values that the assets are contributing to the bottom line of the organisation must be determined. With regard to the progress of internal business, the value to the way the organisation operates has to be identified. Values to the beneficiaries of the assets must also be considered because they relate to the customer and external stakeholder.

4.8.1 Performance Measures' Studies

According to Hinks and McNay (1999), there remains an enduring lack of agreement across the field in relation to the nature and terminology for performance indicators. This is a situation which probably endorses other academic observations about the impracticality of creating a singular and comprehensive set of generally applicable performance indicators, as suggested by Slater *et al*. (1997). There is a strong consensus that a bespoke set of KPIs would need to be developed for a bespoke application (Hinks and McNay, 1999).

Slater *et al.* (1997) also believe that a PM framework should be limited to between seven and 12 performance measures. Varcoe (1993) accords that the ideal number of performance indicators should be minimised, by suggesting between five or six well-defined business objectives, each with four to six KPIs. Bititci *et al.* (1997) believe that the performance measures must take into account the corporate and functional strategies and objectives.

The study of the academic literature identified a body of research on PMS and performance indicators developed by various authors, as shown in Figure 4.2 and Figure 4.3.

Liyana and Egbu (2008) propose a framework for PM in healthcare FM services. The objective of the framework is to provide plausible solutions for the control of Healthcare Associated Infections (HAI) (refer to Figure 4.2). It introduces the performance measures or indicators such as Control of HAI, Organisation and Policy, Service Levels and Standards. Although the overall framework shows appropriate measures, it only focuses on a specific service, that is, cleaning. Lavy *et al*. (2010) have possibly introduced the most comprehensive PM framework of all, by identifying the appropriate KPIs for specific FM services. In this approach, the indicators are proposed together with the measurement units in order to provide a holistic performance assessment. Enoma and Allen (2007) have introduced a set of KPIs that they believe can potentially be used for airport security and safety. The final output also specified the priorities, targets and measure of success for each KPI.

Hinks and McNay (1999) were among the first to develop a PMS. Their proposed PMS was based on the management-by-variance principle. They proposed the seven main performance parameters, namely business benefits, equipment, space, environment, change management, maintenance/services and general, with respective indicators. The study also emphasised prioritising the indicators, which correlated the views from customers and premises. Augenbroe and Park (2007) have attempted to validate the applicability and usability of a benchmarking toolkit in their case study sample of public offices. The focus of the study is on building performance, particularly on energy, lighting, thermal comfort and maintenance. The final output offers a set of normative and software tools for rapid deployment and integration into the owner's asset management process.

Loosemore and Hsin (2001) have explored the relationship between FM and core objectives by examining the KPIs used (refer to Figure 4.3). Based on the customer-focused KPI principle, they have proposed the KPI sets for five sectors: health, education, hotels, defence, and government enterprise respectively. Attributes were also introduced for some indicators in the hotel, education and government enterprise sectors. In 2000, Ho *et al.* adopted the benchmarking approach in identifying the metrics that are considered important in practice. The sample size undertaken was the Asia Pacific companies who were also involved in ranking the benchmarking parameters and indicators. The benchmarking metrics or parameters evaluated were on the size and use of facilities, maintenance measurements, refurbishment measurements, cleaning measurements and energy consumption.

In 1998, Massheder and Finch identified the metrics used by FM practitioners among 25 UK companies. The focus was on the benchmarking practice in the FM industry. The final output proposed five sets of performance dimensions, namely business, building performance, portfolio, acquisition and disposal of, and indicators, respectively. Meng and Minogue (2011) have conducted a survey of 73 companies with the aim of identifying the most important performance indicators used by them. Based on the Performance Model principle, the study suggests 10 important performance indicators, namely client satisfaction, cost-effectiveness, response time, service reliability, health, safety, environmental compliance, staff commitment, client-service provider relationship and IT application. The performance measures or indicators were formulated from the body of literature and results from the expert interviews.

All the PM studies mentioned above focused on the implementation of PMS. In general, they aimed to identify the most suitable and appropriate performance measures or indicators for various different sectors. This shows the growing interest in understanding the priorities and practical application of performance measures in enhancing service delivery. Although various concepts and approaches were used in these studies, the approach and concept of this research is different and unique. This research aims to identify the performance measures used in managing the FM services at the selected buildings of different types of services, namely healthcare, retail, finance and office buildings. It aims to propose a set of performance measures frameworks (PERFM) that outlines the suitable FM performance measures that were derived from the body of literature and the case study methodology.

Authors / Elements	Liyana and Egbu (2008)	Lavy et al. (2010)	Enoma and Allen (2007)	Hinks and McNay (1999)	Augenbro and Park (2007)
Scope	Healthcare	General	Airport	Finance	Public Offices
Aim	To propose a framework for PM in FM services in hospitals	To identify KPIs and categorise them based on specific aspects of facilities services	To propose a potential list of KPIs for airport safety and security	To overcome the lack of generalised sets of KPIs	To validate the applicability and usability of a benchmarking toolkit
Emphasis	Providing plausible solutions for the control of HAI	To facilitate a holistic performance assessment	Proving that FM is vital in improving the performance of airport facilities	Prioritising the indicators which correlated the views of customers and the premises	Offering a set of normative and software tools for rapid deployment and integration in the owner's asset management process
Focus	Domestic Service (Cleaning)	FM services	Safety and Security	FM services	Building Performance
Principle/ Approach	-	-	-	Principle of Management-by-variance	Benchmarking toolkit
Methodology	Mixed Method	Qualitative (Literature)	Mixed Method	Qualitative (Case Study)	Qualitative Data Collection
Sample	Not indicated	Not indicated	Scotland Airport	Not indicated	Not indicated
Framework	Indicators-Measures	Indicators- Description-Units-Sources	Indicators-Priorities-Measure of success-Target	Dimension-Indicators	Aspect-Function-Definition and units
Formulation of Measures	Literature Findings (triangulation method)	Literature	Literature	Literature Refinement from case study	Literature Accreditation Bodies
Indicators	Control of HAI Organisation and Policy Service Levels Standards	Financial Physical Functional Survey-based	Safety and Security	General	Energy Lighting Thermal Comfort Maintenance
Compliance	NHS standards	Not indicated	Not indicated	Not indicated	Accreditation Bodies
Findings	Performance results were used by the case studies samples as a reporting mechanism and not to manage their performance level	None of the existing KPIs were categorised properly	FM functions in the area of safety and security are important especially in controlling the smooth service delivery	The revised KPI list and priorities ranked by the practitioners	Positive results in the applicability of the tools
Output	Performance Management Framework	Categories and definition of KPIs	KPIs in safety and security	KPIs in FM	Building Performance Indicators
Comments	Measures are appropriate but not thoroughly defined and formulated like a checklist The frameworks are not specific and no presentation of domestic service measures is shown	Sub-indicators proposed for each of the main indicators are comprehensive but they are mainly being described and not being given attributes or specific metrics Measurement units are presented with each indicator	The priorities and targets identified for each KPI are specific, but the measures of success proposed are a little generic. The list could be improved with more variance on the indicators and measures (more indicators with sub-indicators)	The final revised KPIs are brief but were selected by the practitioners The proposed set is lacking in detailed attributes for each indicator	The study focuses on the normative aspect of building performance only in regards to the calculation of building comfort formulas

Figure 4.2: Previous studies on PM (I)

Authors / *Elements*	*Loosemore and Hsin (2001)*	*Ho et al. (2000)*	*Massheder and Finch (1998)*	*Meng and Minogue (2011)*
Scope	Health, Education, Hotels, Defence, Government, Enterprises	General (Asia Pacific)	General (UK)	General (UK and Ireland)
Aim	To explore the relationship between FM and core objectives by examining the KPIs used	To study the preference of performance measurements and indicators	To identify metrics used by FM practitioners	To identify the most important performance indicators
Emphasis	Understanding the relationship between FM and core objectives by looking at the KPIs in practice	Identifying the metrics that are considered important in practice	Understanding the practice of benchmarking in the FM industry	Understanding the real effect of existing models in the FM sector
Focus	FM services	FM services	FM services	FM services
Principle/ Approach	Customer-focused KPI	Benchmarking	Benchmarking	Performance Models
Methodology	Quantitative (Interview)	Quantitative (Questionnaire Survey)	Quantitative (Questionnaire Survey)	Quantitative (Questionnaire Survey)
Sample	Not indicated	Asia Pacific companies	25 UK companies	73 companies
Framework	Services-KPI	Measurement- Indicator	Aspect-Metrics	Performance Indicators
Formulation of Measures	Data Analysis	• Literature • Accreditation Bodies	Not indicated	• Literature • Expert interviews
Indicators	Based on respective industries	• Size and use of facilities • Maintenance • Refurbishment • Cleaning • Energy consumption • Ground and environment • Safety and Security • Parking	• Business • Building Performance • Portfolio • Acquisition • Disposal	• Client Satisfaction • Cost-effectiveness • Response time • Service reliability • Health • Safety • Environmental Compliance • Staff commitment • Client-service provider relationship • IT application
Compliance	Accreditation Bodies	Accreditation Bodies	Not indicated	Not indicated
Findings	Most respondents did not benchmark their facilities' performance and had little knowledge of corporate KPIs	Strong preference for measurements to indicators, probably as the measurements are used for internal benchmarking and indicators for external benchmarking	Low implementation of benchmarking metrics by the respondents	Most respondents find KPI to be the most successful tool in measuring performance
Output	List of KPIs used by sample sectors	Rank of importance for measurements and indicators	Statistics on the usage of benchmarking metrics	Important performance indicators
Comments	• Lists of KPIs presented for each sector are not detailed, which is believed to be due to the data collection not being thoroughly conducted	• The measurement and indicators are not grouped together, which can result in overlapping of votes by the respondents	• The metrics asked to the respondents are brief and not detailed	The study was mostly on the comparison of performance measurement models and gives little exploration on the performance indicators

Figure 4.3: Previous studies on PM (II)

4.8.2 Performance Measures Used

Based on the nine studies on PM, the aggregation levels of performance measures are performance parameters or metrics, indicators and attributes. Figure 4.4 shows the specific performance metrics and respective indicators used in the studies by Liyana and Egbu (2008), Lavy *et al*. (2010) and Enoma and Allen (2007). Liyana and Egbu (2008) have proposed a PM framework that can be used for FM service in the healthcare sector. The performance metrics proposed are control of HAI, organisation policy, service levels and standards. In general, the performance metrics and indicators aim to ensure that the effectiveness of work is achieved and the importance of communication, particularly in the control of HAI and service levels, is agreed. The indicators are also more focused on the quality control and standard. Emphasis is on the management control of the proposed metrics, specifically on the clarity, appropriateness, implementation control and also defined roles and communication among the employees. Lavy *et al*. (2010) propose four performance metrics, namely financial, functional, physical and survey-based, which they believe are important in delivering a FM service. Fifteen indicators are proposed for financial performance metric. The financial indicators range from utility cost, operating cost, deferred maintenance and deferred maintenance backlog, and also Facility Condition Index (FCI). Functional performance metric focuses on the indicators pertaining to the productivity, parking, utilisation and adequacy of space, employee or occupants, turnover rates, mission and vision, and Mission Dependency Index (MDI). Physical metric has 10 indicators that are dedicated to the physical and performance evaluation, including the specification of FM services such as waste, security and others. Survey-based metric concerns the participation in and satisfaction of the services from customer or building occupants, appearance, and also making sure that the environment of the building is provided to suit the learning and educational appropriateness. Enoma and Allen (2007) propose a set of KPIs that they signify as important in measuring the performance of an airport's safety and security. The metrics are concerned with the breach of security, evacuation in the case of emergency, hysteria control, managing the damage and attacks on facilities by passengers, and destructive passengers' behaviours at airports. The respective indicators for all the performance metrics serve as a helpful tool in managing the security at airports, which is of a very high level. This set of indicators is very focused and is anticipated to enhance to enhance the safety and security performance at airports specifically.

Performance Management Framework by Liyanage and Egbu (2008)	*Key Performance Indicators (KPIs) by Lavy et al. (2010)*	*Safety and Security Indicators by Enoma and Allen (2007)*
[1] Control of HAI • *Reduction of HAI rates* • *Prioritised with domestic services* • *Awareness among staff* • *Effective communication of changes* • *Effective implementation of changes* [2] Organisation and Policy • *Consistency with national level* • *Roles and responsibilities are clearly defined* • *Adherence to policies* • *Policies clearly defined and communicated to the staff* • *Appropriateness of policies* • *Necessary amendment and revision of policies* [3] Service Levels • *Clearly defined and consistent with national level* • *Appropriateness and suitability of service levels* • *Necessary amendment and revision on a regular basis* • *Communicated effectively to all staff* [4] Standards • *Clearly defined and consistent with national level* • *Appropriateness and suitability of standards* • *Necessary amendment and revision on a regular basis*	[1] Financial • Utility costs • *Operating costs* • *Occupancy costs* • *Capital costs* • *Building maintenance cost* • *Ground-keeping cost* • *Custodial and janitorial cost* • *Churn rate and churn costs* • *Current Replacement Value (CRV)* • *Deferred maintenance and deferred maintenance backlog* • *Capital renewal* • *Maintenance of Efficiency Indicators (MEI)* • *Facility Condition Index (FCI)* [2] Functional • *Productivity* • *Parking* • *Space Utilisation* • *Employee or Occupants* • *Adequacy of space* • *Turnover rate* • *Mission & Vision and Mission Dependency Index (MDI)* [3] Physical • *Building physical condition* • *Building Performance Index (BPI)* • *Property & real estate* • *Waste* • *Health & Safety* • *Security Site & location* • *Indoor Environment Quality (IEQ)* • *Accessibility for Disabled* • *Resource consumption- energy use, waste, materials* *[4]* Survey-based • *Customer/ buildings/ occupants' satisfaction with products or services* • *Appearance* • *Community satisfaction and participation* • *Learning environment educational suitability and appropriateness of facility for the function*	[1] Breach of Security • *Speed at locating the event of breach* • *Speed in dealing with the breach* • *CCTV control* • *Airport control centre* • *Communications* • *Uniform direction of passenger movement* [2] Evacuation in the case of Emergency • *Speed of evacuation* • *Clear communication* • *Clear signage* • *Unobstructed route* • *Efficiency and effectiveness of security officers' responses* 3] Hysteria Control • *Speed of getting things under control* • *Effective communication* • *Setting up support zones* • *Smooth transition* • *Sufficient workforce* • *Medical and food support* • *Rearrange travel arrangement* • *Clear communication and coordination* [4] Attack on airport facilities or installations and destructive or criminal behaviour by passenger on board aircraft • *Speed in providing facility returns* • *Availability/ back up/ repair of facility* • *Easy repair and replacement* • *Strength of workforce* [5] Destructive or criminal behaviour of cargo by passenger on board aircraft • *Dealing with the incident* • *Speed in taking control of the situation* • *Way and manner the airport officials handle the situation* • *Early support service from Special Branch* • *Early arrival of help from ambulances and medical crew* • *Support and rearrange travel arrangement* • *Clear communications to public*

Figure 4.4: Studies on performance measures (I)

Hinks and McNay (1999) have introduced the proposed output on KPIs, which they believe should overcome the lack of generalised KPIs for FM services (refer to Figure 4.5). The performance metrics used are business benefits, equipment, space, environment, change management, maintenance or services, and general. The indicators for business benefits are aimed at making sure that the services contribute to the monetary value, and provide a suitable functional development environment, and that the failure of premises' services do not contribute to the business loss. Similarly, the indicators for environment performance metrics are on providing a safe environment and satisfactory working conditions.

Augenbroe and Park (2007) have offered a normative set of performance measures and also software tools (refer to Figure 4.5). Four performance measures are introduced, which are energy, lighting, thermal comfort and maintenance. The indicators for energy are heating, cooling, humidifying, lighting, pumps, fans and hot water. The indicators for lighting, thermal comfort and maintenance are also paired with the measurable attributes. The attributes are mostly in the building comfort calculation formulas, for instance, electric lighting energy consumption, average of Predicted Percentage Dissatisfied (PPD) and Manpower Utilisation Index (MUI). The applicability of the tools has also been proven in their study.

Loosemore and Hsin (2001) have proposed five different sets of performance measures that they believe can be applied in different sectors like health, hotel, education, defence and government enterprise (refer to Figure 4.6). For the health sector, 13 performance metrics were introduced from both financial and non-financial metrics with most of them in formula and calculation format. As for the hotel sector, the performance metrics range from plant and equipment, amenities and facilities (television, swimming pool), service (lighting), strategic management (space management), staffing (manpower), profit and, most importantly, the satisfaction of their customers or guests. Although the performance metrics do not cover all the FM services offered for a hotel, these are their findings on the performance metrics and indicators used for the hotel sector. The same concept also applies for all the other sectors. The proposed performance metrics for the defence sector do not have any indicators or attributes, but only five subjective metrics. In contrast to that, the measurements listed for the government sector are grouped from performance metrics, indicators and attributes' levels with a combination of both financial and non-financial metrics.

Principle of Management-by-variance by Hinks and McNay (1999)		Building Performance KPIs by Augenbroe and Park (2007)			
[1] Business Benefits • *Value for money* • *No loss of business due to failure of premises' services*	• *Suitability of premises and functional environment*	[1] Energy • *Heating* • *Humidifying*	• *Cooling* • *Hot Water (MJ)*	• *Lighting* • *Fans*	• *Pumps*
[2] Equipment • *Equipment provided meets business needs*	• *Correction of faults*	[2] Lighting • *Energy Efficacy* ○ Electric Lighting Energy consumption Kw h/m^2 year ○ Luminous efficacy of luminaires in LER (lumens/watt) ○ Daylighting autonomy: % of hours without requiring electric lighting	• *Task Lighting* ○ Ratio of task illuminance as installed and as required • *View to outside* ○ Outward visibility: percentage of occupants who can see the outside from their workplaces	• *Visual Comfort* ○ Daylighting glare avoidance: percentage of office hours in discomfort range (Daylighting glare index ≥24, just uncomfortable)	○ Shading devices for glare avoidance and energy saving (under development)
[3] Space • *Effective utilisation of space*					
[4] Environment • *Satisfactory physical working conditions*	• *Energy performance* • *Provision of safe environment*	[3] Thermal Comfort • *Air Diffusion* ○ Occupants in comfort (%) • *Occupants' variation* ○ Average PPD of workers in different activities and clothing levels • *Zoning* ○ *Airflow rate variation in different rooms within a single thermostat zone*	• *Asymmetrical thermal radiation due to hot/cold glazing* ○ Hourly average Predicted Percentage Dissatisfied (PPD) during office hours over one year ○ Hours (%) where PPD is in the comfort range (10%) ○ Average of PPD, where PPD is in the comfort range (10%)	• *Occupants' variation* ○ Average PPD of workers in different activities and clothing levels • *Cold draft caused by glazing* ○ Hourly average PD during office hours over one year ○ Hours (%) where PD is in the comfort range (10%) ○ Average of PD, where PD is in the comfort range (10%)	• *System's capacity and response time* ○ Minutes required to increase and decrease the zone temperature by 1^{O}c under the peak heating load ○ Minutes required to decrease the zone temperature by 1^{O} C under the peak cooling load
[5] Change Management • *Effective communication* • *Quality of end product* • *Responsiveness of contractors to changes/ requirements*	• *Achievement of completion deadlines* • *Completion of project to customer satisfaction*				
[6] Maintenance/ services • *Management of maintenance* • *Reliability*	• *Effectiveness of helpdesk service* • *Standards of cleaning*	[4] Maintenance • *Business and Organisation* ○ Manpower Sources Diagram (MSD): ratio of in-house and outsourcing expenditures ○ Managerial Span of Control (MSC): ratio of a manager and subordinated personnel ○ Preventive Maintenance Ratio (PMR) (%): ratio of man-hours spent on preventive maintenance and total maintenance (preventive plus corrective)	○ Business availability (%): available floor area over an entire floor area over one year ○ Manpower Utilisation Index (MUI) (%): ratio of man-hours and total available man-hours • *Policy* ○ Maintenance productivity: state/£ (under development)	• *Failure frequency and timeliness* ○ Urgent Repari Request Indicator (URI) and General Repair Request Indicator (GRI):occurrence/ 10 000 m^2 ○ Average time to repair (ATTR): unit repairing time (h)	• *Efficiency* ○ Building Performance Indicator (BPI), scaled from 0 to 100 ○ Maintenance Efficiency Indicator (MEI)
[7] General • *Responsiveness to problems* • *Customer satisfaction* • *Management information*	• *Professional approach of premises' staff* • *Competence of staff*				

Figure 4.5: Studies on performance measures (II)

KPIs used in various sectors by Loosemore and Hsin (2001)

[1] Health Sector

- *Average stay period*
- *Patient mortality*
- *Number of patient throughput*
- *Cost per bed (capital, maintenance and energy*
- *Cost per occasion of service*
- *Mean time between failures*
- *Down time*
- *Cost of repairs*
- *Availability*
- *Running costs*
- *Life-cycle costs*
- *Time of response to maintenance requests*
- *Ability to deliver stated requirements*

[2] Hotel Sector

- *Plant and equipment*
  - Response time
  - Down time
- *Number of occupants*
- *Revenue generated*
- *Lighting*
  - Request for repairs
  - Quality of lighting
  - Lifetime of bulbs/strips
- *Gross opening profit*
- *Swimming pool*
  - Temperature of water
  - Chemical balance of water
  - Cleanliness of water
- *Guest satisfaction*
- *Space management*
  - *Floor area/ guest*
- *Manpower*
  - Productivity/staff member
- *Television*
  - Quality of picture
  - Range of programmes
  - Timeliness of programmes
  - Number of complaints

[3] Education Sector

- *Space management*
  - Floor area efficiency (gross floor area/ usable floor area)
  - Gross floor area per full-time student load
  - Gross floor area per staff load
- *Cleaning*
  - Total cleaning expenditure/m^2
  - Total cleaning expenditure/m^2 / full-time student load
  - In-house staff costs/ total cleaning costs
- *Building maintenance*
  - Facility condition index (current asset conditions/ as-new condition)
  - Facility functionality index
  - Total maintenance expenditure/m^2
  - Backlog expenditure/ backlog liability
- *Security services*
  - Security expenditure/ m^2
  - Security expenditure/ full-time student load
  - In-house staff costs/Security expenditure
- *Energy consumption*
  - Annual energy consumption/m^2
  - Annual energy consumption per m^2 / full-time student load
  - Annual energy cost/ m^2
  - Annual energy cost per m^2 / full-time student load
- *Water consumption*
  - Water consumption/ m^2
  - Water consumption/ full-time student load
  - Water cost/ total water consumption
- *Parking services*
  - Number of parking spaces/ full-time staff
  - Number of parking spaces/ full-time student load
- *Building operating costs*
  - Total operating costs/ m^2
  - Total operating costs/ full-time student load
  - Total operating costs/ operating grant
- *Ground maintenance*
  - Ground expenditure per ha
- *Refurbishment projects*
  - Refurbishment expenditure/ asset replacement value
  - Refurbishment expenditure/m^2
- *Telephone services*
- *Cost of telephone system/staff member*

[4] Defence Sector

- *Down time*
- *Non-performance*
- *Defects*
- *Delays*
- *Response Time*

[5] Government Enterprise

- *Customer Satisfaction*
  - Delivery performance (consistent on time delivery)
  - Cares about customers
  - Friendly service by knowledgeable staff
  - Easy to use products and services
  - Value for money
- *Financial*
  - Net profit
  - Revenue growth
  - Ordinary dividends
  - Return on average assets
- *Non-financial*
  - Number of letters
  - Standard letter rate
  - Productivity growth
  - Cumulative labour productivity
  - Mail volume growth
  - Human resources
- *Retail-based*
  - *Productivity analysis*
    - Cost to house as a percentage of retail revenue
    - Occupancy cost as a percentage of retail revenue
    - Cost to house per 100 customers
    - Retail revenue per m^2
    - Customers per day
    - Retail revenue per customer
  - Retail revenue per full-timeemployee
  - Square metres per counter position
  - Retail revenue per counter position
  - Customers per counter position
  - Customers per full-time employee
  - *Occupancy analysis*
    - Rental costs per m^2
    - Outgoing costs per m^2
    - Occupancy costs per m^2
    - Cleaning costs per m^2
    - Energy costs per m^2
    - Total accommodation costs per m^2
    - Depreciation costs per m^2
    - Total costs to house per m^2

Figure 4.6: Studies on performance measures (III)

Ho *et al.* (2000) have proposed a set of performance measures for eight scopes of FM services, which are size and use of facilities, maintenance, refurbishment, cleaning, energy consumption, ground and environment, safety and security, and parking (refer to Figure 4.7). Each of the performance dimensions is introduced with specific measurements, to which this research referred as performance metrics and performance indicators for all the studies mentioned before. These two elements, performance metrics and indicators, are implemented in different levels. According to Ho et al. (2000), performance metrics are preferred more than indicators as they are implemented for internal benchmarking, whereas the latter is used for external benchmarking. The performance measures and indicators proposed by Ho *et al*., are both objective and subjective performance measures, and also financial and non-financial performance measures.

In Figure 4.8, Massheder and Finch (1998) propose five benchmarking elements that were being used by various organisations in the UK, namely business, building performance, portfolio, acquisition and disposal. The business performance metric focuses on two main components, which are occupancy: which relates to the costing in relation to business unit; and location: which is concerned with the locational analysis of the availability of key skills, and also locational optimisation. Similarly, the building performance metric is also focused on the occupancy, particularly on the calculations of occupancy per sq metre, person and also building size. The other performance indicators for portfolio, acquisition and disposal are a mixture of both objective and subjective performance measures. Meng and Minogue (2011) have suggested 10 important performance measures that were being used by the organisations in the UK and Ireland (refer to Figure 4.8). The performance measures are focused on various key elements. For instance, in terms of quality the research outlines the response time and service reliability. Emphasis is also given to the compliance of important service elements like health, safety and environmental compliance. It also considers the importance of the human factor; therefore, indicators such as client satisfaction, staff commitment and client-service provider relationship are also proposed. The other three metrics that are perceived in delivering FM services are cost-effectiveness, staff commitment and IT application. Each of the studies described above provides different findings and output on their proposed set of frameworks, which they believe are appropriate and practical for FM services. This study has referred to the proposed performance measures, indicators and attributes in proposing a novel set of performance measures.

Benchmarking by Ho *et al*. (2000)

[1] Size and use of facilities

- *Measurements*
  - Gross floor area
  - Usable area
  - Rentable area
  - Asset replacement value (total)
  - Asset replacement value (maintained)
  - Lease cost
  - Initial cost
  - Operation cost
  - Occupancy cost
  - Disposal cost
  - Planning cost
  - Project cost
  - Insurance and taxes
  - Company moves
  - Costs of moves
  - Total annual facility cost
  - Annual income
  - Subletting income
  - Risk evaluation

- *Indicators*
  - Square footage per employee
  - Gross floor area/usable floor area
  - Facility condition index
  - Space distribution by classification
  - Asset replacement value/ m^2
  - Operation cost/m^2
  - Occupancy cost/m^2
  - Occupancy cost/employee
  - Building efficiency rates
  - Workstation utilisation rates
  - Vacancy rates
  - Churn rates
  - Facility budget/corporation budget
  - Facility budget/facility assets
  - Facility operating budget ratio
  - Facility budget/corporate revenue
  - Owned area/leased area
  - Facility cost/rentable m^2
  - Facility cost/employee
  - Facility cost/workstation

[2] Maintenance

- *Measurements*
  - Total maintenance expenditure
  - Backlogs
  - Area maintained
  - Maintenance staffing size
  - Total deferred liabilities
  - Availability of replacement parts
  - Availability of maintenance contractors
  - Adequacy of budget
  - Competence of in-house staff
  - Occupant's satisfaction
  - Proportion of outsourcing
  - Frequency of building failures

- *Indicators*
  - Facility condition index
  - Proportion of repair time
  - Proportion of preventive maintenance time
  - Repair cost/m^2
  - Preventive maintenance cost/m^2
  - Maintenance cost/m^2
  - Maintenance cost/Asset replacement value
  - Backlog maintenance expenditure/total backlog maintenance liabilities
  - Area maintained/maintenance persons
  - In-house staffing/contract staffing
  - Janitorial cost/m^2
  - Indirect cost/m^2

[3] Refurbishment

- *Measurements*
  - Total refurbishment cost

- *Indicators*
  - Refurbishment expenditure/Asset replacement value
  - Refurbishment expenditure/m^2

[4] Cleaning

- *Measurements*
  - Cleanliness status of site, interior and exterior and fittings, etc
  - Total cleaning cost
  - Area cleaned

- *Indicators*
  - In-house staff cost/total cleaning cost
  - Cleaning expenditure/m^2
  - Cleaning expenditure/person

[5] Ground and environment

- *Measurements*
  - *Hectares maintained*
  - *Total environment cost*

- *Indicators*
  - *Ground maintenance expenditure/hectare*
  - *Environment cost/m^2*

[6] Parking

- *Measurements*
  - Total cost of parking system
  - Total number of parking spaces available

[7] Energy consumption

- *Measurements*
  - Annual consumption
  - Annual cost of energy purchased

- *Indicators*
  - Energy consumption/m2
  - Energy expenditure/m2
  - Energy consumption/person
  - Energy expenditure/person
  - Cost per m2
  - Cost per person
  - Average cost/kWh
  - Proportion of total gross floor area serviced with energy
  - Proportion of tenant's energy cost
  - Energy efficiency
  - Unit cost for each fuel
  - Total ground maintenance expenditure

[8] Safety and Security

- *Measurements*
  - *Total safety and security expenditure*
  - *Gross floor area under safety and security patrol*

- *Indicators*
  - Security expenditure/m2
  - Security expenditure/person
  - In-house staff cost/total security cost

Figure 4.7: Studies on performance measures (IV)

Important Performance Indicators by Meng and Minogue (2011)	Benchmarking Metrics by Massheder and Finch (1998)				
[1] Client Satisfaction [2] Cost-effectiveness 3] Response time [4] Service reliability [5] Health [6] Safety [7] Environmental Compliance [8] Staff commitment [9] Client-service provider relationship [10] IT application	[1] Business • *Occupancy cost as a % of operating revenue by building* • *Occupancy cost as a % of the total of labour and o/h costs by business unit* • *Occupancy cost as a % of operating revenue by business unit* • *Locational analysis on basis of where key skills are available* • *Locational optimisation (in context of attractors and repellers)*	[2] Building Performance • *Occupancy cost per sq metre (% change)* • *Occupancy cost per person (% change)* • *Occupancy costs by building size* • *Sq metres per person (% change)* • *Itemised (occupancy) cost comparison of above by building*	[3] Portfolio • *Proportion of operational space compared to non-operational space* • *Current market capital value compared to book value (freeholds) by building* • *Current market rental value compared the charged value* • *Proportion of non-operational space that is sublet or assigned*	[4] Acquisition • *Costs of acquisition measured against returns i.e. IRR* • *Actual extra occupancy cost against predicted cost* • *Amount of space coming on stream per unit time* • *Time to find and acquire space against programme* • *Time to occupation against programme*	[5] Disposal • *Holding costs per year* • *Time to dispose of building against programme* • *Cost of disposal against savings i.e. pay-back* • *Time to clear buildings against programme* • *Holding costs to lease end, break and/or estimated disposal date* • *Disposal performance measures against natural portfolio shed rate* • *Month's vacancy to lease end, break and/or estimated disposal date*

Figure 4.8: Studies on Performance Measures (V)

4.9 Chapter Summary

Based from the literature in this chapter, it can be concluded that the implementation of PM approach in FM practice is highly valuable. It can contribute significantly to the FM practice particularly by emphasising the measures needed to ensure a quality service delivery. Studies on the previous PM models and measures have shown that each model focuses on FM service scope differently. Despite some of the PM models propose detailed performance measures, they are still lacking of comprehensive coverage on all FM service scopes. Following the overview of performance and PM of chapter 4, in chapter 5 the aspects pertaining the development of a PM framework are covered. The next chapter looks into the components of developing a PM framework leading to the workflow and theoretical framework that have been considered in developing PERFM.

CHAPTER 5: DEVELOPMENT OF A PERFORMANCE MEASUREMENT (PM) FRAMEWORK

This chapter explains the rationale and processes in developing a PM framework, and shows the important elements and processes that were referred to in developing the Performance Measurement Framework (PERFM). The theoretical framework of this study is also presented, which links the research objectives, processes and outcomes. This chapter also discusses how the performance measures for PERFM have been selected and how they contribute to a successful framework. Sections on the pilot study survey and analysis are also presented towards the end of the chapter. The objectives in conducting the pilot study survey are to understand the general thinking and implementation of both PM and FM among the practitioners and to demonstrate the findings which support the need of the research scopes- PM and FM to be explored especially within Malaysian context.

5.1 The Rationale in Developing a Framework

Performance is generally accepted to be a less complex concept in the private sector than in the public sector because most stakeholders agree that strong financial results are essential to business success. Despite increasing attention being paid to public service performance, the persistent problem has been the conceptualisation and measurement of performance (Andrews *et al*., 2006). According to Neely *et al*. (1997), measurement provides a means of capturing performance data, which can be used to inform decision-making. There is also no clear consensus on the best approach for measuring organisational performance (Pandey and Moynihan, 2006). One of the key weaknesses of the PMS used by many firms is that they have traditionally adopted a narrow or uni-dimensional focus (Neely *et al*., 2000), which can be overcome if a firm adopts a balanced set of measures that aim to monitor the performance quality (Kaplan and Norton, 1992). However, Neely *et al*. (2000) suggest that there is little guidance on how the appropriate performance measures can be identified, introduced and ultimately used to manage the business. In order for the framework to be of practical value, they also further suggest that the process of populating the framework has to be understood.

FM managers may have difficulties in selecting the appropriate performance measures on which to rely for their services. Keegan *et al.* (1989), for instance, have proposed a set of performance measures that integrate different classes of business performance, namely financial and non-financial and also internal and external. However, practitioners may have problems in identifying links between the four different parameters. Fitzgerald *et al.* (1991) have suggested that any organisation should consider performance measures that relate to results and also determinants of results, but the performance measures are quite limited and brief. On the other hand, Azzone *et al.* (1991) have created a model that is suitable for organisations that want to specifically focus on the time-based competition. Despite an appropriate set of performance measures linking the four elements of input, process, output and outcome, Brown (1996) has proposed a set of performance measures that seem not to be derived from a business or organisation's objectives or strategies. However, these performance measures probably seemed to fit well with the industry at that time. On the other hand, Lynch and Cross (1991) have introduced a Performance Pyramid that focuses on the horizontal flows of material and information within an organisation. However, the sets of performance measures being introduced are very open and can be interpreted in many ways, resulting in FM managers not achieving the desired performance results.

These are a few examples of performance measures proposed by various authors for FM managers' reference. All of the above models are leaning on the general approach of performance for an organisation. But none of them is actually geared towards service delivery strategies. Some may have meeting customers' satisfaction as the targeted end result, but the processes towards the outcome do not specifically explain the paramount elements grouped under quality or services. Managers are still looking for off-the-shelf solutions, which require little time and effort to develop. The day-to-day pressures of their jobs prevent them from to spending time and effort thinking about FM, so they are forced to fall back on simple pre-packaged solutions (Neely *et al*., 2000). Reflecting on this problem, this study identifies the rationale behind the development of PM framework in FM.

5.2 Multiple Dimensions of Performance

Businesses choose to measure performance for various reasons, among which are: to know where they are, to know how rapidly they are improving, to enable comparison with other business, even to influence individuals' behaviour (Neely *et*

al., 1997). Organisational performance is multifaceted (Boyne, 2003) as the public organisations are required to address a range of goals, some of which may be conflicting, and they are also obliged to focus attention on multiple dimensions of performance (Andrews *et al*., 2006).

Boyne (2002) introduces a few conceptual categories of performance dimensions: outputs, efficiency, responsiveness and democratic outcomes. These dimensions have been adapted in various academic studies, governments and public organisations (Andrews *et al*., 2006):

- Outputs - the quantity and quality of services
- Efficiency - concerned with the cost per unit of outputs
- Effectiveness - refers to the achievement of formal objectives
- Responsiveness - includes measures of satisfaction as judged by direct service users, wider citizens and staff
- Democratic outcomes - concerned with accountability, probity and participation

A few important aspects, namely functionality, quality, comfort and efficiency are suggested by Trinius and Sjostrom (2005) as the main elements in technical performance requirements which can help to ensure that the services provided are operational. They further suggest that one component or building material provides its functionality and performance to other components or materials on the same system level, or to components, or to the building on a higher system level, due to their integration in the same building. Therefore, a material or a component also demands certain functionality from other items in its surroundings in order to reach its performance. The viability of a firm now depends largely on how well it is capable of responding to customer requirements while becoming lean (Gunasekaran *et al*., 2001).

5.3 Design Process

The design of a performance measure is a fundamental process. Inputs, in the form of requirements, are captured and an output, in the form of a performance measure, is produced (Neely *et al*., 1997). Designing specific measures of performance is essential (Neely *et al*., 1997) and the two requirements of the design phase are identifying the key objectives to be measured and designing the measures (Bourne *et al*., 2000). A theory by Trinius and Sjostrom (2005) suggests that the level of

required performance is assumed to be constant over time; although, in reality, the requirement might as well be discontinuous or increase over time. They further suggest that, for modern buildings, performance usually decreases over time and one of the leading factors - apart from the design and construction aspect - is the level of maintenance. The step-by-step development of the PM design for this study is based on the following process workflow:

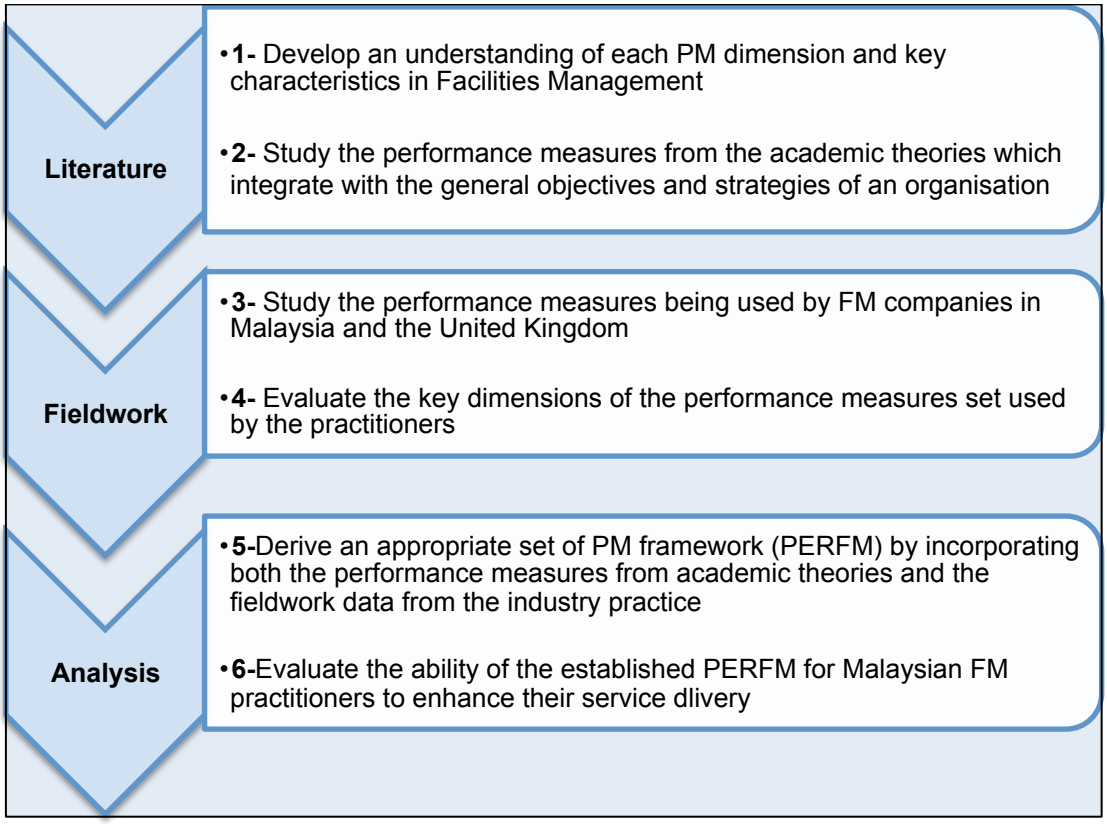


Figure 5.1: The process workflow in designing the PM framework

Figure 5.1 shows the workflow processes that have become the backbone in designing the PM framework, which consists of three important sections and levels, namely literature, fieldwork and analysis.

5.3.1 Literature

The first stage of designing a PM framework (PERFM) starts by focusing on the literature of PM, FM and the overlapping elements of these two scopes. The processes at this level are based on two aims. The first is to develop an understanding of each PM dimension and key characteristics in FM. The approaches and principles of PM which are applicable in the FM context are used in the literature. The second aim is to study the performance measures, which

based on the academic theories, integrates with the general objectives and strategies of an organisation.

5.3.2 Fieldwork

In the fieldwork stage, this research studies the performance measures used by organisations in two separate case study regions, that is, Malaysia and the UK. Case studies conducted in organisations have given the research 16 different sets of performance measures practised by these companies respectively. Based on this, evaluation of the key dimensions used by these practitioners was conducted, as each company has proven that they have differing preferences and perspectives on the performance measures and criteria.

5.3.3 Analysis

During the analysis stage, this study seeks to derive an appropriate PM framework by incorporating both the normative performance measures from academic theories and the fieldwork data from the industry practice. Next, this study evaluates the appropriateness of the established PERFM within the Malaysian industry so FM practitioners in this region can enhance their service delivery.

5.4 Developing A Theoretical Framework

The theoretical framework of a piece of research must consider that the study should benefit from previous scientific contributions. The starting point of the empirical research is going to be an initial combination of factors and the empirical research's assumed relationship with the phenomenon studied, resulting in a wide bibliographical revision (Nieto and Perez, 2000). According to Santos (1999, cited in Amaratunga and Baldry, 2003), an explicit theoretical framework is the logical and necessary steps used in making sense of integrating and re-arranging the ideas. It is also impossible to codify existing knowledge in the field in a coherent manner without using the logical and necessary steps. It has long been recognised that inadequately designed performance measures can result in dysfunctional behaviour. This is often because the method of calculating performance is the formula that encourages individuals to pursue inappropriate courses of action (Neely *et al*., 1997).

Chotipanich (2004) emphasises the need to use frameworks within FM. Frameworks can be used to ensure that a given performance measure stimulates appropriate improvements in business performance, and to identify the reasons why past performance shortfalls have occurred (Neely *et al*., 1997). By having a framework that outlines the FM processes and key elements, PM can be effectively determined (Amaratunga and Baldry, 2000b). In this current context of FM, there is a lack of a systematic process in determining appropriate performance measures. There is also confusion regarding which areas to target and give priorities in FM, something which is rarely acknowledged in the literature (Holloway *et al*., 1999). Thus, it is crucial for FM practitioners to have a set of performance measures that is appropriate for measuring their service delivery performance. If systematically designed into a framework, this set of performance measures will assist the FM practitioners to deliver the best value of their services and help to evaluate the impacts of the concerned areas for further improvement. Therefore, the framework is necessary to incorporate an appropriate set of performance measures in response to the lack of performance measures being addressed above. The plethora of poorly designed performance measures, which encourage undesirable behaviours, suggests that the process of designing performance measures is fraught with difficulty (Neely *et al*., 1997). In theory, the PM framework established at the end of this study should help businesses or FM services to properly scrutinise their performance level and the service standards and requirements that they are looking for or aiming to deliver to their users.

The issues discussed above have shown the necessity for building up a theory to overcome the research problem. In this context, this study proposes and incorporates a theoretical framework that populates both academic theories and industrial practice. The conceptual framework of this research is based on the balance between two extreme positions, as suggested by Strauss and Corbin (1990), where it incorporates an effective research approach by being sensitive to concepts arising purely from the data, as well as an efficient approach where a focus is also given to gaining maximum benefit from the data collection resources. Marshall and Rossman (1995) also suggest that a researcher should strive to reach a balance between these two extremes. According to Amaratunga and Baldry (2003), the theoretical framework acts as a basic structural framework to identify and explain facts and the relationships between them. Bodies of theory must be examined and evaluated to arrive at a theoretical basis or framework appropriate to the research proposed. It is necessary to articulate an overall theory in order to set

up a “theoretical framework” to represent the best practice in PM in FM (Amaratunga and Baldry, 2003). The development of a theoretical framework in this research focuses on the classification and development of a theoretical framework for the research methodology.

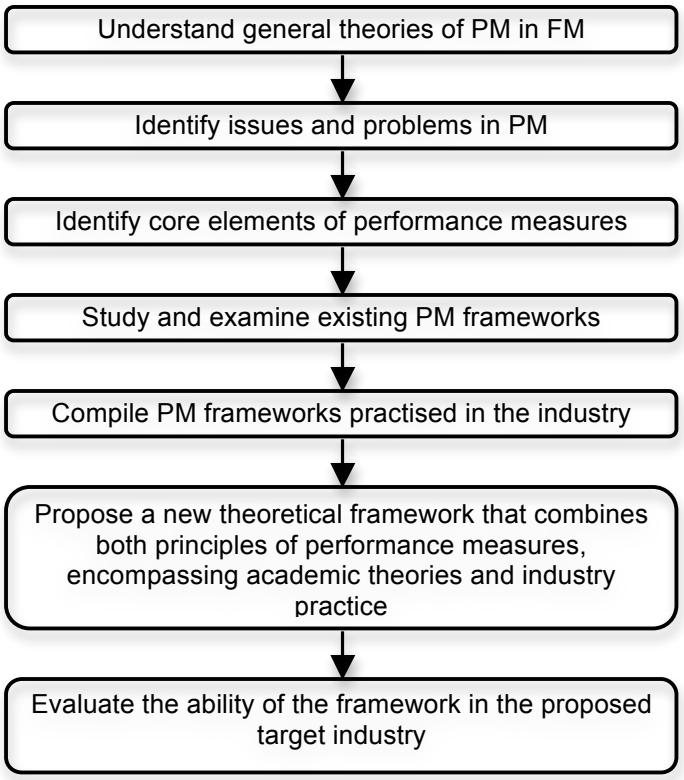


Figure 5.2: Theoretical Framework of the research study

This theoretical framework describes the steps and processes involved in building up the basis of this research (refer to Figure 5.2). The starting point of this research is to understand the general theories of PM in FM. This concerns the development of PM in recent years and its significant role in the FM industry. It is necessary to explore the underlying phenomena and theories pertaining to PM that are evolving in the industry today. Next, the identification issues and problems in PM will bring the research into another perspective as to what are the challenges and problems faced in the scope of PM, particularly in the FM industry. At this point, consideration of the substantial issues that need to be overcome will be the crucial point in determining the issues this research aims to tackle. It is also believed that the more precisely the scope and its underpinning issues are defined, the greater the chance of identifying problems in performance measurement will be.

This study then moves to narrowing the subject of the scope by focusing on the performance measures element of the general PM. All suggested core elements are compiled to get a consensus regarding what the academic theories on the appropriate core elements to measure performance suggest. Various key elements that are considered to be core to any FM service performance in the literature survey are examined. As described by Bourne *et al*. (2000), two requirements of the design phase are identifying the key objectives to be measured and designing the measures. Alongside this, the PM framework was analysed and thoroughly scrutinised with respect to their respective approaches, principles, performance measures and overall designs. This research then adopts a fieldwork methodology where case studies are conducted in order to compile the different types of PM frameworks being practised in the FM industry. In this context, this study looks into two different FM industries – one of which is in Malaysia where FM is considered immature and the other in the UK where FM has shown progressive developments. Frameworks from the mixed method analysis will be the main reference for the outcome of the next phase. Then, new performance measures were be formulated, taking into account the performance measures suggested in the academic theories and the ones practised by the 16 case studies. Further evaluation was also conducted to assess the ability of the framework in enhancing FM service delivery in Malaysia.

This theoretical framework is believed to serve as a sound basis for this research as it incorporates the core elements by Amaratunga and Baldry (2003) in developing a theoretical framework, namely examining existing frameworks, studying practices, looking for theoretical explanations, and also identifying potentially useful theories and comparing them with practice. The development of a theoretical framework in this research focuses on the classification and structuring of the core ideas underpinning the current PM theories. This theoretical framework's phases of research are useful as they allow the important scopes of this research to be defined and analysed into split phases which require different approaches. The phases also highlight the lack of coverage and literature on certain aspects, namely on the development of a PM framework for FM services. The processes lead to the classification of the important measures in PM and to a means of providing a framework for the identification of the key measures of the subject.

5.5 Validity of Performance Measures

Performance measure is a means of tracking performance (Fry, 1995) and, as suggested by Boyne *et al*. (2006), there are two types of data - perceptual or 'subjective' data and archival or 'objective data - that are believed to be the best source of performance. However, Andrews *et al*. (2006) state that, although academics have debated for over three decades on the merits of subjective and objective performance measures, both objective and subjective performance measures of performance are still being used in studies of the determinants of performance in public organisations but rarely in combination (Meier and O'Toole, 2003; Andrews *et al*., 2006), as they are both equally susceptible to problems of validity.

Andrews *et al*. (2006) have proposed the following identities for both objective and subjective performance measures:

(i) Objective performance measures:

- Objective performance measures have been viewed as the gold standard in public management research
- They are typically regarded as the optimum indicators of public sector performance because they are believed to reflect the 'real' world accurately and 'minimise discretion' (Meier and Brudney, 2002)
- An objective indicator should therefore be impartial, independent, and detached from the unit of analysis
- To reduce discretion and be objective, a measure of performance must involve, first, the precise assessment of a dimension of performance and, second, an external process to verify its accuracy - many measures meet these criteria
- Examples: school exam results - they reflect an element of effectiveness of schools, and students' achievements are validated through the marking of their work by external examiners.

(ii) Subjective performance measures:

- A subjective measure may be biased or prejudiced in some way and is not distant from the unit of analysis.

- Like objective performance measures, subjective performance measures must refer to a dimension of performance that is relevant to the organisation, that is, subjective judgements may be made either by members of an organisation, such that judgements of performance are internal, typically obtained from surveys of managers; or they may be based on external stakeholders such as consumers or inspectors employed by regulatory agencies. While these measures are external, they typically have not been subjected to independent scrutiny.
- Internal subjective performance measures - based on perceptions of corporate and service managers, and users
- External subjective performance measures – e.g. derived from other inspection reports for local services

5.5.1 Validity of Objective and Subjective Performance Measures

A number of validity issues exist in relation to all types of performance measures. Validity is not a problem only for subjective performance measures - serious questions have also been posed about the accuracy of objective performance measures (Bohte and Meier, 2000). The solution is to combine both subjective and objective performance measures to compensate for the deficiencies of using either in isolation. However, when studies adopt both types of performance measures, their limitations are not always systematically addressed and they are sometimes seen as interchangeable. There are also positive and statistically significant correlations between objective and subjective performance measures of overall performance only when measures of the same dimensions of performance are used (Guest *et al.,* 2003; Voss and Voss, 2000). It has been suggested that the best course of action for public management researchers and practitioners is to use both objective and subjective performance measures to capture diverse interpretations of organisational performance and to address the limitations of each type of performance measure.

Criteria that balance both objective and subjective performance measures, in which, if any of these conditions is not met then the relationship between subjective and objective measures of performance will become weaker, can be defined as follows:

- The same criteria of performance are used
- The weights attached to the criteria are the same

- The same indicators are used to operationalise these criteria
- The information is regarded as equally credible by different groups
- Expectations of the level of achievement against the indicators are the same

Andrews *et al*., (2006) also signify the following aspects of objective vs. subjective performance measures:

- Using objective performance measures can be most difficult when they are paired with an extensive number of performance dimensions in the public sector. When objective performance measures are not able to deal with the complexity of performance in public organisations, serious attention must be paid to the use of subjective performance measures.
- The use of subjective performance measures is often defended in the literature because objective performance measures are simply not available, or do not tap into all of the appropriate dimensions of performance.
- Subjective performance measures are seen to be limited because they suffer from a number of flaws, of which common-method bias is believed to be the most serious (Wall *et al*., 2004). Common-method bias is caused by informants' general predilection towards giving similar responses to separate survey questions (using the higher or lower points on a response scale). This causes problems when survey respondents make judgements on both management and performance and these variables are then used in statistical models.
- Reliance upon recall together with uncertainty about informants' knowledge of actual performance may also undermine the accuracy of subjective performance measures (Golden, 1992).
- It cannot be concluded that subjective perceptions of performance are 'wrong' simply because they are weakly related to objective measures. Except when either subjective or objective performance measures are distorted by low reliability or deliberate error, neither is an inherently superior estimate of organisational performance in the public sector.

5.6 The Process of Selecting Performance Measures

The lack of well-defined performance criteria through which performance of individuals and the organisation may be evaluated, makes it hard to plan and control (Globerson, 1985). Inappropriate performance measures lead to difficulties in

tackling productivity issues and problems (Neely *et al*., 1997). According to Gumbus (2005), measures for performance are created by defining a comprehensive list of measures used in the business and narrowing the list to the key performance measures that truly assess business success. The larger list of performance measures can be derived from current management measures used at executive meetings, budgets, plans, and board reports - that is, by looking at key processes; by assessing what individual departments are using to measure their own performance; or by external benchmarks derived from seminars, articles, and books. On the other hand, Gumbus (2005) also states that there a few criteria of performance measures that cannot be used: measures that may not have an owner, which means that there is no proper group for them; measures that may be duplicated and trivial; measures that are impossible to capture any data; and most importantly, those measures that do not contribute to the business.

There is still uncertainty over the best way to measure and operationalise the criteria of performance, for instance, in the use of aggregated or broad and individual or narrow measures of performance by which to judge the performance progress:

- Aggregated performance measures draw together performance data from a number of sources to produce an overall score for an organisation. Results are often presented in scorecard format (Weimer and Gormley, 1999).
- Individual performance measure typically focuses on one dimension of performance in one service area and is reported as specific performance indicator.
- Using aggregated performance measures may mask the contributions of particular management practices, while using individual ones could result in what educationalists call ‘teaching to the test’.

The question of what constitutes a well-designed PM framework is often not being addressed despite the high level of academic and industrial interest in PM (Neely *et al*., 1997). Brewer (2006) agrees that the reason that organisational performance is widely practiced in the public sector is because organisational performance is a socially-constructed concept and all measures of performance are subjective. In the public sector, organisational performance is an elusive concept and in this context the perceptual measures are appropriate. There is a challenge in creating perpetual and subjective performance measures that satisfy three crucial criteria: validity, reliability and sensitivity (Brewer, 2006).

5.7 Criteria of A Successful PM Framework

A successful PM framework must be driven from the top of the organisation and business management. The success depends upon a well-developed organisational structure, an understanding of the role of the customer, and ownership by top and middle management (Kaplan and Norton, 1996b). This is also proven by the introduction of a set of Balance Scorecards (BSC) by Gumbus (2002), in which the initial mobilisation and momentum is required to launch the effort and sustain it over time. There is also a need to have a continuous focus to track best practices, flexibility for changing strategies and to continually monitor against targeted outcomes. Performance measures also have a behavioural impact on systems, especially systems involving humans, who respond to performance measures. People modify their behaviours in an attempt to ensure a positive performance outcome even if this means pursuing inappropriate courses of action (Hoopwood, 1984).

A PM framework must be complete, measurable and controllable. If any of these important criteria are absent, the performance measures will not link to an employee's daily operations (Inamdar *et al*., 2000). The use of too many performance measures can also lead to resistance from employees (Gumbus, 2005). The ideal PM situation is one in which there is widespread agreement about what the organisation should be doing and that this goal can be accurately identified through a limited number of performance measures. Unfortunately, this rarely exists for public organisations (Pandey and Moynihan, 2006). The design of a PM framework is principally a cognitive exercise, translating the views of customer and other stakeholder needs into business objectives and appropriate performance measures. There is now a growing body of literature on this specific topic which suggests that this process is becoming understood (Bourne *et al*., 2000). If the organisation fails to deliver the right products and cost-effective services to satisfy customers' needs in both the short- and long-term, the consequences are that revenue will not be generated, and the business will wither and die (Amaratunga and Baldry, 2003). A framework seeks to encapsulate the elements, which together constitute good performance measures and can be used to ensure that the selected measures will drive improvements in the company (Neely *et al*., 1997). FM managers should have a clear idea of their customer and business segments, and should select a set of core outcome measurements for those targeted segments. These outcome measurements should represent the targets for an FM

organisation's product and service development process (Amaratunga and Baldry, 2003).

Conventional PMS focus only on monitoring and improving cost, quality and time-based measures of existing business processes. In contrast, there is a need for an approach to measure performance, which enables demand for internal process performance to be derived from the expectations of specific external constituencies. Managers need to decide at which operations, processes, competencies and skills their organisations must excel if customer demands are to be met adequately (Amaratunga and Baldry, 2003).

5.8 Performance Criteria

The aim of the process design phase is to establish a practical PMS design process, building on the best of academic theory and industrial practice, which could subsequently be tested through live application (Neely *et al.,* 2000). The key issue in designing performance measures is that they have to be matched to the organisational context (Neely *et al*., 1997). This can be achieved by selecting appropriate performance measures, and this study proposes a set of performance criteria in designing and selecting suitable performance measures based on academic references, as shown in Figure 5.3.

This study proposes a set of elements that need to be considered when designing performance measures. As measurement provides a means of capturing performance data, which can be used to inform decision-making, the following fundamentals must be considered seriously (Neely *et al*., 1997):

- Purposes must be related to business objectives and specified to enable the monitoring of the rate of improvement, thereby driving down the total cost, stimulating improvement in the delivery performance of suppliers, and ensuring that the new product introduction lead-time is continually reduced.
- Objectives of any business are a function of the requirements of its owners and customers. The levels of performance the business needs to achieve to satisfy these objectives are dependent on how good its competitors are.
- The ways that assess whether performance is improving rapidly enough are by having knowledge of how good the competition is and having an explicit target, which specifies the level of performance to be achieved, and a time scale for achieving it. This will also ascertain whether the business is able to compete in

the medium to long term.

- Typical targets are:
  (i) 20 per cent improvement year on year
  (ii) 15 per cent reduction during the next 12 months
  (iii) Achieve 98 per cent delivery performance (on time, in full) by the end of next year
- One of the golden rules of PM is that there is no point measuring someone or something over which the companies have no control.

Unless the management loops are closed, there is no point in having the measurement. It is possible to define in general the management process that will be followed should performance appear to be either acceptable or unacceptable.

Elements	Performance Criteria	Source
Aims	• Have an explicit purpose • Derived from company's objectives • Directly related to firm's strategy	Globerson, 1985; Maskell, 1989
Benchmarking	• Comparison of the organisations in the same business	Globerson, 1985
Purpose	• Must be made explicit • Should reflect the business process • Rationale underlying the measure has to be specified	Globerson, 1985; Fortuin, 1988; Maskell, 1989; Lynch and Cross, 1991; Neely *et al.,* 1997; Neely *et al*., 2000
Principles	• Objective (not based on opinion) and simple to understand • Relevant and have visual impact • Focus on improvement rather than variance • Visible and clearly defined to all • Provide precise information • Consistent (maintain significance)	Hall, 1983; Globerson, 1985; Fortuin, 1988; Lea and Parker, 1989; Crawford and Cox, 1990; Azzone et al., 1991; House and Price, 1991; Lynch and Cross, 1991
Formulation	• Data collection and methods of calculating the performance criteria must be clearly defined • There is a link between strategies, action and measures • Geared to meet customers' expectation and satisfaction • Relate to specific, stretching, but achievable goals/targets • Based on quantities that can be influenced or controlled by the users • Based on explicitly defined formula and source of data	Globerson, 1985; Lynch and Cross, 1991; Myeda *et al*., 2011
Weightage	• Ratio based performance criteria are preferred to absolute numbers	Globerson, 1985
Design	• Integration of objective and subjective measures • Cross-functional structure • Be focused on improvement rather than variance	Parker, 1989; Lynch and Cross, 1991; White, 1996; Lea and Parker, 1989; Hall *et al*., 1991; Atkinson and Brown, 2001; Wordsworth, 2001
Approach	• Stimulate continuous improvement rather than simply monitor • System Audit approach • Incident Evaluation approach • Cause and effect relationship between the measures • Balanced view of the services system	Maskell 1989; Dwight, 1995; Wordsworth, 2001
Types	• Adoption of non-financial measures • Consider objective or subjective measures or a combination of both	Andrews *et al*., 2006
Methods/Process	• Discussions with the people involved (customers, employees, managers)	Globerson, 1985; Sinclair and Zairi, 1996
Management	• Under the control of the evaluated organisational unit • Part of a closed management loop	Globerson, 1985; Kaplan and Norton, 1992
Implementation	• Flexible to changes in performance and circumstances • Simple and easy to use • Provide timely/fast and accurate feedback • Use data which are automatically collected as part of a process whenever possible	Globerson, 1985; Fortuin, 1988; Maskell, 1989; Dixon et al., 1990; McMann and Nanni, 1994;Bourne *et al*., 2000; Myeda *et al*., 2011
Report	• Should be reported in a simple consistent format • Regular reporting	Maskell, 1989; Lynch and Cross, 1991

Figure 5.3: Important elements to consider when designing and selecting appropriate performance measure

As the performance measures are drafted based on the organisation's objectives, indirectly the framework also identifies the organisation's core position and, therefore, progress towards organisation-wide integration (Amaratunga and Baldry, 2003). A good PMS or PM framework should include subjective performance measures as well as objective performance measures. The objective performance measures are addressed in order to have the advantage of not being biased by whoever is providing the opinion. Conversely, subjective performance measures provide a wealth and variety that is not obtainable from objective performance measures alone (White, 1996). Myeda *et al.* (2011) also suggest that the formulation of performance measures must be geared to meet customers' expectation and satisfaction. Customers' concerns tend to fall into four categories: time, quality, performance and service (Kaplan and Norton, 1992), and consist of performance measures relating to the most desired customer requirements (Amaratunga and Baldry, 2003).

According to Neely *et al*. (1997), customer service is a multi-dimensional concept and, like quality and flexibility, it can be affected by both tangible and intangible factors. Customers may base their assessment of the level of service they receive on factors such as the value of the product or service, their satisfaction with their environment in which they receive their service, and the speed with which the service is delivered. However, the essence of customer service will vary from one organisation to the other. Hence, it is important to consider what are the requirements and perceptions of customers to the service delivered. This will be one of the pillars in selecting and constructing appropriate performance measures.

Performance measures also have a behavioural impact on how systems, especially systems involving humans, how they actually respond to specified performance measures. People modify their behaviours in an attempt to ensure a positive performance outcome, even if this means pursuing inappropriate courses of action (Hoopwood, 1984). Those organisations that can translate their PMS are far better able to execute their strategy because they can communicate their objectives and their targets (Amaratunga and Baldry, 2003). The ideal PM situation is one in which there is widespread agreement about what the organisation should be doing and that this goal can be accurately identified through a limited number of performance measures. Unfortunately, this rarely exists for public organisations (Pandey and Moynihan, 2006).

PM has already been described as a process of assessing the progress towards achieving pre-determined goals, including information on the efficiency with which resources are transformed into goods and services, the quality of those outputs and outcomes, and the effectiveness of organisational operations in terms of their specific contributions to organisational objectives (Amaratunga and Baldry, 20003). Bititci *et al*. (2000) also suggest that the PMS needs to be dynamic by being able to: cope with the changes to the external and internal environment of the organisation, deploy significant changes to the internal objectives and priorities to critical parts of the organisation, and ensure alignment at all times and that gains are achieved throughout the improvement programmes.

Performance is closely related to end customer values. Obvious difficulties lie in understanding and describing user values and in determining the conformity of the delivered products with these values (Trinius and Sjostrom, 2005). A best practice PM framework should represent the criteria that the FM organisation should fulfil in order to be fully integrated with the rest of the organisation. FM tasks and services indicate that they range from pure service tasks to more complex tasks (Haas, 2010). In this respect, facilities managers need to identify how FM could be integrated with other departments within the core organisations (Amaratunga and Baldry, 20003). On the other hand, from the micro perspective, an increasing number of organisations are finding it profitable to adopt strategies that require the development of closer partnership relationships with their major suppliers (Croom *et al.,* 2000).

Different stakeholders will have different expectations concerning building performance. They normally express performance requirements from their sphere of interest and are influenced by their priorities in aspects of building performance. Five key stakeholders in the building sector are listed to indicate their differences in perspective and expectations, namely the users, investors, regulators, product manufacturers and designers (Trinius and Sjostrom, 2005). Therefore, Amaratunga and Baldry (2003) have suggested the following:

- PM in FM should be based upon how useful FM is to the business
- The measurement of the whole of the FM function should be involved rather than merely summing the parts
- The challenge of measuring what is really important and not continuing the mistake of placing the emphasis on the importance of measurement.

As for the reporting of management aspects, the decision-makers must be enabled to identify relevant performance requirements that reflect the current situations as well as reflecting the requirements expressed on higher levels of concern (Trinius and Sjostrom, 2005). The internal processes report on the efficiency of internal organisational processes and procedures, and reflect the organisation's core skills and the critical technology involved in adding value to the business. They enable the FM organisation to satisfy stakeholder expectations, including producing excellent financial returns (Amaratunga and Baldry, 2003). The organisation's internal processes focus on the internal business results and lead to financial success and the satisfaction of customers' expectations (Olve *et al*., 1999). Measurement should be focused on the internal processes that will have the greatest impact on customer satisfaction and achieve the organisation's financial objectives (Amaratunga and Baldry, 2003).

There is a rising need for organisations to reassess their measurement systems, but managers still do not complete their review of management systems. Reasons given were lack of time and other business pressure (Neely *et al*., 2000). The lack of well-defined performance criteria, through which performance of individuals and the organisation may be evaluated, make it hard to plan and control (Globerson, 1985). Responding to this, this study's proposed framework can be a good reference as it combines both academic theory and practised measures in the industry, which is also the unique point of this research. It is believed that there are problems arising during the design process, particularly at the discussion stage regarding selection of appropriate performance measures, whereby there is resistance to measurement, and also top management commitment is being distracted by other events (Bourne *et al*., 2000)

5.9 Service Classification Parameters

The service characteristics above influence the way the FM function can manage the service and the processes involved in delivering the service (Haas, 2010). These more complex tasks also have interfaces with other internal organisation departments as well as with external service providers, implying that the FM function in this broad perspective spans professional skills and functions (Tay and Ooi, 2001). The service area of FM is where the greatest focus is on the outsourcing of FM service processes (Haas, 2010) and is seen as the processes supporting the core business processes, for example, IT, catering, reception and cleaning (Jensen,

2008). There are a few requirements and challenges for the FM function in delivering an optimum operational services, namely setting service level standards and monitoring the service performance, outlining skills requirements among FM staff and sourcing of FM service competence, and also balancing costs vs. value of support service (Ellram *et al*., 2004; Jensen, 2008). Haas (2010) has proposed a set of service classification parameters that need to be looked at in delivery services to the customers or end users. The generic parameters are shown in Figure 5.4, namely frequency, relation to core products, customer contact, tangibility of service act, complexity, people or equipment dependency, adaptability, place of service encounter and service tragets. The descriptions of the respective parameters indicate the how the parameters can be adapted to the service delivery accordingly.

Generic Parameters	**Description**
Frequency • Continuous • Discrete	A service process may take place several times giving multiple moments of truth, or it may be a rare event. This may influence relationship development both towards customers and suppliers.
Relation to core product • Core • Peripheral	To what extent the service is part of the core product or service. This may influence the perceived importance of the delivered service.
Customer contact • High • Low	Extent of customer contact required in service delivery influences how involved customers are in the service process and the service quality delivered.
Tangibility of service act • Tangible • Intangible	This indicates how well the service is understood and the customer evaluates quality. In cases where end users are not the same the service may be perceived differently by the parties.
Complexity • Simple • Complex	The complexity of the service process in terms of skills requirements and specialised equipment. Simple does not equal standardised and complex does not equal non-standardised.
People/equipment dependency • People intensive • Equipment intensive	Services can either be high-touch or high-tech services. High-touch services are dependent on people in the service process, whereas high-tech services are more dependent on physical resources. However, person-based services often involve some kind of physical resources in the service process, and technology-based services at some point involve people, e.g. if the service process fails.
Adaptability • Customised • Standardised	To what extent the service is adapted to individual needs. This customisation can be both applied by service provider and customers/end users. The person dimension of services leaves room for more customisation than with physical products. The number of user groups also influences requirements for adaptation of service processes.
Place of service encounter • Service provider • Customer	Whether the service process and service consumption take place at the service provider or at the customer. This also includes distinguishing between single and multi site delivery. Another influencing factor is the number of different customers/user groups, as a distinction can be made between end users and people involved in the service delivery process.
Service target • People • Things	Services can be directed at things such as property and systems or at people, such as healthcare or education. The perception of the service is also influenced by the tangibility of the service act.

Figure 5.4: Service classification parameters
(Source: Haas, 2010)

5.10 Principles of Supply Chain Management in FM

It is becoming increasingly more difficult and less economical for companies to produce their needs on their own (Gunasekaran *et al*., 2001) and the solution to this is by taking the outsourcing approach. Supply Chain Management (SCM) has the same focus as FM, that is, to add value to the customer, and concerns on delivering the best result to the end users. Mohd-Noor and Pitt (2009b) also suggest that SCM principles can be applied to have a more effective organisational supply chain for FM service delivery. There are areas where FM could gain advantages from SCM and they have similarities in dealing with a non-physical product, that is, a service, and are focused on customer demand, service levels and performance measures (Haas, 2010).

An interesting theory has been proposed by Haas (2010), where the comparison of SCM process and FM service scopes, namely space management, operational services, and service, is carried out (refer to Table 5.1). There are opportunities for FM in specifying PM requirements to align with SCM scopes and context, especially as SCM is believed to have a more established identity than FM. This is supported by McLennan (2004), who states that the lack of conceptual or theoretical management framework is part of the reason why FM remains misunderstood in the general business sector.

The theoretical comparison also indicates that performance metrics can be specifically identified according to SCM service elements like information flow, capacity and skills management, customer relationship management, supplier relationship management, service delivery management, cash flow and demand management.

Service SCM Process	Content	FM Service Scopes		
		Space Management	***Operational Services***	***Service***
Information Flow	*Demand estimation and information sharing*	*Knowledge and access to information for planning, allocation and utilisation of space*	*Setting service level standards and monitoring the service performance*	*Service level standards and performance measurement*
Capacity and skills management	*Investments in organisational processes, assets and staff*	*Building competences in space management*	*Skills requirements among FM staff and sourcing of FM service*	*Education and training of service personnel. Optimising work processes*
Customer relationship management (CRM)	*Customer segmentation and relationship management*	*Relationship building with key management stakeholders to identify needs and propose efficiency improvements*	*Improve resource efficiency (i.e. energy)*	*Investigate customer needs and wants. Set up routines for service evaluation.*
Supplier relationship management (SRM)	*Supplier identification, supplier selection, supplier segmentation and relationship management*	*Relationship building with key management stakeholders to identify needs and propose efficiency improvements*	*Setting service level standards and monitoring the service performance*	*Sourcing of services* *Service level standards and performance measurement*
Service delivery management	*Making promises to customers, enabling service providers*	*Interaction and understanding of customer needs as well as client wishes*	*Setting service level standards and monitoring the service performance*	*Service level standards and performance measurement*
Cash flow	*Flow of payments between parties*	*Rental fees*	*Usage cost (i.e. energy consumption: electricity, water, gas)*	*Balancing costs vs. value of support services*
Demand management	*Forecasting customer requirements*	*Interaction and understanding of customer needs as well as client wishes*	*Overview and monitoring of building utilisation*	*Secure the right capacity to deliver the requested service*

Table 5.1: The theoretical comparison of SCM service element with FM service scopes

(Source: Haas, 2010

5.11 Pilot Study Survey

This section presents the findings from pilot study survey and analysis. The questionnaire design, scales used and also the analysis of the findings from each survey section are presented. The objective of the Phase 1 pilot survey data collection and analysis is to understand the current scenario of FM practice in Malaysia. The findings give an overview of the responses from the FM practitioners in relation to the FM knowledge and the implementation of PMS in their FM services.

The survey serves as a preliminary study that helps to give an idea of the main subjects of the research, which are FM and PM. The focus was to comprehend respondents' understanding of FM maturity and knowledge, strategic FM, and client's corporate objectives as well as the implementation of PMS in FM. The pilot study survey was conducted within the research sample, that is, FM practitioners in Malaysia, to gain an understanding of the elements of FM and PM in their practice. The results also prove that there is an opportunity for further exploration on the subject of FM and PM in Malaysia.

5.11.1 Questionnaire Design

A qualitative survey adopted at this level of data collection as it provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population. The questionnaire survey includes cross-sectional and longitudinal studies using questionnaires for data collection, with the intent of generalising from a sample to a population (Babbie, 1990). The survey was chosen at the preliminary stage, as it is believed to give good statistics and numerical results to perceive the viability of the research scope. The questionnaire is a survey instrument used to elicit information from the respondents as it translates the information needed into a set of specific questions that the respondents can and will answer (Mahmud, 2008). This methodology is also the best approach to obtain an explanation and understanding of the current FM industry in Malaysia. This questionnaire is designed to be straightforward and simple. Ali (2009) believes this design and approach is more likely to attract higher responses. This research was conducted by using a qualitative survey approach aimed at FM practitioners in

Malaysia. 37 responses received were further analysed by using Statistical Analysis Software SPSS 19.0.

5.11.2 Structure of the Questionnaire

The questionnaire comprises both structured and open-ended questions and is divided into five (5) sections as shown in Table 5.2.

Sections		***Details***
A1:	FM Profession and Role	Respondents are asked to grade their level of agreement with statements pertaining to recognition of FM roles and profession by the government, public and clients, level of competencies of FM personnel and implementation of current FM technology
A2:	Strategic FM	Questions in this section are focused on the implementation of FM strategies, and their integration with the client's corporate objectives. Respondents are also asked to rank the factors that most influence FM strategies and rate the statements pertaining to FM strategies.
A3:	FM & Client's Corporate Objectives	This section assesses whether FM is included in the client's corporate objectives and company budget plan, FM contribution to the client's company, and the linkages between FM and its strategies with the business needs.
A4:	PM in FM	This last section looks at the PM elements, particularly at the implementation of PMS by the respondents and its background, the service improvement resulting from the PMS, and respondents' opinions on the PMS.
B:	Background Information	Questions on the basic information and personal background of the respondents: gender, age, job position, size of company and period of involvement in FM.

Table 5.2: Structure of the questionnaire

5.11.3 Attitude Rating Scales

Attitude rating scales are used to measure the level of agreements for the statements in each section. The rating scales used in this research are both simple attitude scaling and Likert scale.

(i) Simple Attitude Scaling

This scale requires the respondents to respond or agree/disagree with a statement or single question and use the nominal scale Yes, No and Not sure.

(ii) Likert Scale

Likert scale ranging from very negative to very positive is used to allow respondents to indicate their level of agreements/perceptions with specifically constructed statements from respective sections (refer to Table 5.3).

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

Table 5.3: Likert scale used in the study

5.11.4 Reliability Test

This study adopts a non-parametric analysis. Reliability test is performed to analyse the consistency of the variables. Based on the result, the coefficient value (α = 0.618) for the reliability test is considered acceptable (Piaw, 2006), as shown in Table 5.4 below:

Alpha Cronbach Coefficient (α)	*Items*
0.618	38

Table 5.4: Cronbach's Alpha value

The coefficient value indicates that the 38 variables analysed from the questionnaire survey are consistent. It signifies the positive similarity among the results derived from the variables and that the participants were consistent in the way they respond to the various questions, in which the scale yields consistent results and is considered reliable.

5.11.5 Respondents' Background

A total of 37 responses were received from the online survey, of which 2 are incomplete. All the 35 respondents of the survey are from Malaysia and all are FM practitioners, with 3 different job titles: FM executive (60%), FM manager (28.6%) and also FM assistant manager (11.4%), as stated in Figure 5.5. Most of them work in large (48.6%) and medium organisations (40%), while only 11.4% work in small organisations. The majority of the FM practitioners have been involved in the FM industry for more than 3 years (71.5%), as shown in Table 5.6.

Job Title	*Number of respondents*
FM Executive	21
FM Manager	10
FM Assistant Manager	4
Total (*n*)	35

Table 5.5: Number of respondents according to job title

Period of Involvement in FM Industry	*Percentage of respondents*
3-5 years	43
More than 5 years	29
1-2 years	20
Less than 1 year	9

Table 5.6: Percentage of respondents based on their period of involvement in the FM industry

5.11.6 FM Profession and Role

Respondents were requested to give opinions on the level of agreement regarding the FM profession, recognition of FM role, and also the current implementation of current FM technology and IT system. Table 5.7 shows the highest selection of answers from the respondents. The majority of the respondents (57%) believed that the FM profession in Malaysia is not highly recognised by the government and 46% of responses were neutral regarding the high qualification and professionally trained background of the FM personnel. The outcome of the survey recommends redefinition of the competence level or standard for effective management of facilities within an organisation. When being asked about the role of FM, 63% of respondents believed that their FM roles and functions are not recognised by the public; and nearly half of the respondents (49%) agreed that their role is highly

recognised by the clients. This accords closely with Kamaruzzaman and Zawawi (2010), where they ascertain that public awareness of the role of FM is still low and attribute that to lack of a FM culture in Malaysia. Previous literature denoted that FM in Malaysia is not mature and not adaptive to global development. However, clients who have particularly close dealings with the FM management for their business may recognise the importance of the FM role and profession. Despite fully implementing an IT system in their FM management system, which they believe helps to enhance the service delivery, 69% of them agreed that their FM service is mainly dependent on the traditional methods compared to having an integrated FM system. Ruslan (2007) relates the factor of still practising a traditional FM as one the factors that causes low service quality in Malaysia. 34% of the respondents of this study also disagreed that they always keep up with the FM progress and developments globally and locally. 46% of them also agreed that the FM industry in Malaysia is still immature and not adaptive to global developments, which corresponds to the findings of previous literature. Concerns about passive development have been expressed by several researchers (Pillay, 2002; Moore and Finch, 2004; Kamaruzzaman and Zawawi, 2010) for a long time and yet no significant and major improvement in this direction is seen.

Measurement	*Variables*	*Highest Selection*	*(%)*
Profession	The FM profession in this country is highly recognised by the government	Disagree	57%
	All our FM personnel are highly qualified and professionally trained to balance knowledge and skills requirement	Neutral	46%
Role	The public generally recognise our FM roles and functions	Disagree	63%
	Our FM role is highly recognised by clients generally	Agree	49%
Development	Our FM service is highly dependent on traditional management methods compared to having an integrated FM system	Agree	69%
	We always keep up with the FM progress and developments locally and globally	Disagree	34%
	FM industry in this country is still immature and is not adaptive to the global development	Agree	46%
	IT system is fully implemented in our FM management system and helps to enhance our service delivery	Agree	46%

Table 5.7: Results on FM profession and role variables

5.11.7 Strategic FM

Respondents were also requested to select the level of FM implementation being practised by their respective companies. 63% of them are using Operational FM while only 37% are using Strategic FM (refer to Figure 5.5). This shows that the traditional method is still widely adopted in Malaysia.

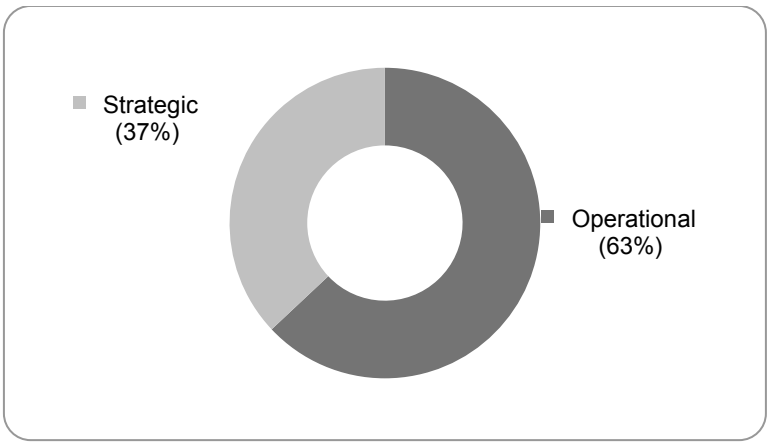


Figure 5.5: The proportion of Levels of FM being implemented

Further analysis of the 13 respondents that are practising Strategic FM shows that the majority of them (69%) agreed that strategic FM improves their service quality and 62% of them strongly agreed that Strategic FM helps to prioritise FM needs. In spite of this, the majority of them (62%) stated that their companies do not adhere to Strategic FM standards or guidelines when practising FM, as shown in Table 5.8.

Variables	*Highest Selection (%)*	
Strategic FM improves our service quality	Agree	69%
Strategic FM helps to prioritise FM needs	Strongly Agree	62%
My company adheres to Strategic FM standards/guidelines when practising FM	Disagree	62%

Table 5.8: Results on variables tested for strategic FM

Respondents were also asked to give feedback on the FM strategies. Pearson Chi-square test was used to analyse the differences within the organisation types on the implementation of FM strategies ($p>0.005$). The p value indicates significant difference of results gathered from FM practitioners that have FM strategies in the company across all three types of organisations which is large, medium and small. In summary, 49% of the respondents - with the biggest majority coming from large companies - do not have FM strategies (refer to Table 5.9). For those that do have FM strategies, they are mainly from medium and large size companies and mostly

have been using them for more than 5 years. All FM practitioners from this group also agreed that FM strategies help to enhance their service delivery and 56% of them believed that FM strategies contribute to the success of their clients' corporate missions. On the other hand, a small fraction (13%) of them signified that the FM strategies practised do not integrate with their clients' corporate objectives or strategies. In 2000, Barret stated that there is a gap that fails to link FM strategies with clients' strategies and FM companies have to rectify the situation in order to deliver a service that meets the clients' objectives.

Does your company have any FM Strategies? (n=35)		*Yes*	*No*	*Not Sure*
Organisation Type	Large	7	9	1
	Medium	8	5	1
	Small	1	3	0
	Total	16	17	2

Table 5.9: Results of the implementation of FM strategies

Respondents were also requested to rank the factors that most influence FM strategies from scale 1-5 with 1 being the highest factor and 5 being the lowest factor. The mean score was used to rank the variables to indicate the differences in the level of impacts among them (Ali *et al*., 2010), as shown in Table 5.10. All these factors are proposed by BIFM (2007) as the factors that influence FM strategies.

Rank	*Variables*	*Mean (n=35)*
1	External condition	3.46
2	Development of property and premises policy	3.06
3	Success of current strategies	2.94
4	Internal condition	2.80
5	Direction of core business	2.74

Table 5.10: The ranking of FM strategies influencing factors as rated by respondents

Based on the analysis, external condition - namely economic, political and market condition - is ranked as the highest factor that influences FM strategies. Moore and Finch (2004) seconded that Asian countries are slow in adapting to global changes. They also believe that Asian countries still need to make further efforts to improve their corporate and financial sectors.

Respondents also selected that the development of property and premises policy is the second highest factor that influences FM strategies. They also perceived that the success of current strategies is a moderate factor that determines FM strategies. At the fourth rank, internal condition refers to the conditions of facilities or finance, buildings and status of FM. Lastly, direction of core business is ranked as the lowest factor that influences FM strategies.

In order to understand the practice of FM strategies, this survey requested the respondents to select the factors that they believe are the barriers to the implication of FM strategies. Seven variables were nominated as the barriers, as shown in Figure 5.6 (BIFM, 2007). Lack of strategic planning in organisation and organisation culture, beliefs and values are ranked as the two highest factors. As for other factors, 2 respondents claimed that lack of budget and the difficulties in dealing with council members about residential properties, which is similar to the sixth-ranked factor - high stakeholders' interest and involvement - are also obstacles in implementing FM strategies.

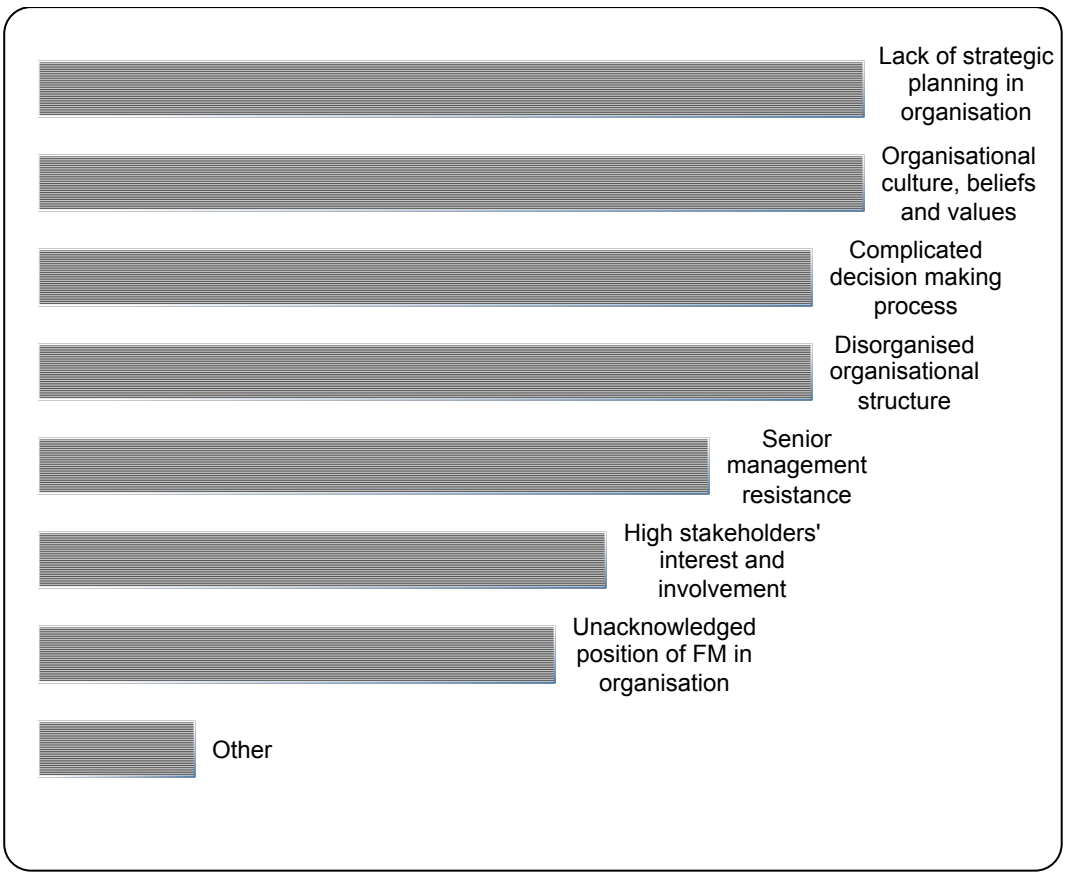


Figure 5.6: Barriers in implementing FM strategies

5.11.8 FM and Client's Corporate Objectives

The relationships between FM and client's business were analysed based on the practice of FM and its status or position in a client's business. In Table 5.11, it can be seen that 40% of the respondents agreed that FM is included in their client's corporate objectives. Nearly half of the respondents (40%) agreed that there is an increasing recognition of FM's contribution to the overall business performance. Nevertheless, 31% of them signified neutral opinions when being asked whether their clients understand the importance of FM strategies in reducing the overall cost. Most of them (37%) also disagreed that FM is highly prioritised in their client's company budget. The respondents were also very positive that FM contribution to the business largely depends on the position of FM in the organisation's hierarchy. This is reflected where 43% of them gave positive agreements on this statement. Similarly, more than half of the respondents (57%) strongly agreed that FM should be strategically planned and aligned to business needs.

Measurement	*Variables*	*Highest Selection*	*(%)*
FM status/ position	FM is included in our client's corporate objectives	Agree	40%
	There is an increasing recognition of FM's contribution to the overall business performance	Agree	40%
FM practice in client's business	Our clients understand the importance of FM strategies in reducing the overall cost	Neutral	31%
	FM is highly prioritised in the client's company budget	Disagree	37%
	FM contribution to the business largely depends on the position of FM in an organisation hierarchy	Agree	43%
	FM should be strategically planned and aligned to business needs	Strongly Agree	57%

Table 5.11: The highest level of agreements on the FM status and practice in client's business

5.11.9 PM in FM

It was found that a large amount of respondents (60%) have no implementation of PMS for their FM service delivery, as indicated in Figure 5.7. One survey participant responded that the reason why PMS is not implemented is to avoid a strict key performance indicator (KPI) in the service performance.

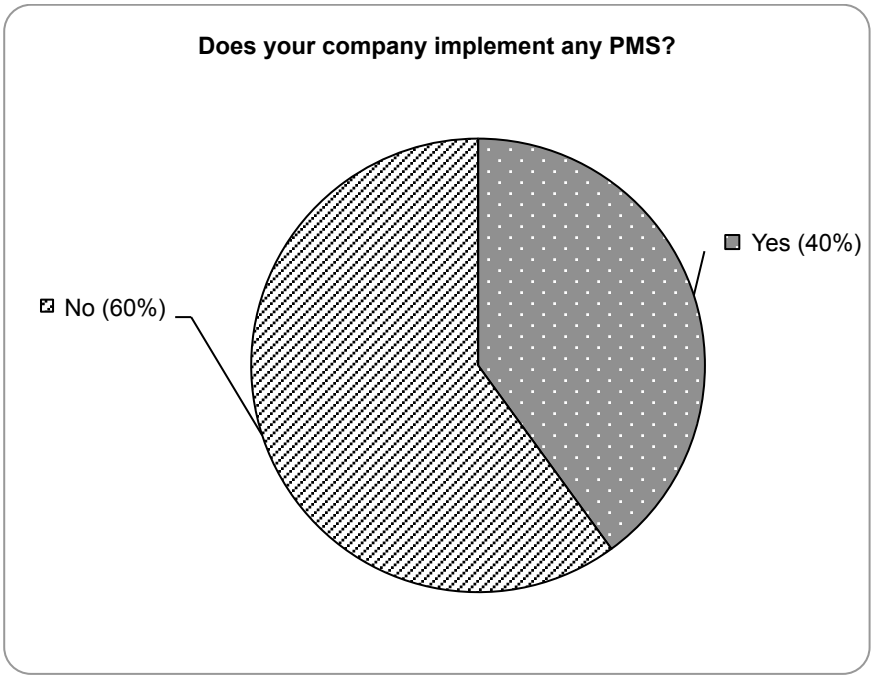


Figure 5.7: Results on the implementation of PMS for FM

Further analysis of the replies from respondents who implement PMS shows that more than half of the respondents (54%) agreed that the PMS serves as an effective tool to communicate with the facilities users (refer to Table 5.12). 43% of them agreed that their PMSs were designed based on the FM strategies. Similarly, 46% of them agreed that the performance indicators should be derived from a set of formulated FM strategies. Half of the respondents (50%) gave neutral opinions when asked whether their PMS are in line with the clients' corporate objectives. The majority, 43%, agreed that their FM performance has improved since the implementation of PMS.

Measurement	*Variables*	*Highest Selection (%)*	
Implementation	PMS serves as an effective tool to communicate with the facilities users	Agree	54%
	Our PMS is designed based on the FM strategies	Agree	43%
	Performance indicators should be derived from a set of formulated FM strategies	Agree	46%
	Our PMS is in line with the client's corporate objectives	Neutral	50%
Improvement	Our FM performance has improved since the implementation of the PMS	Agree	43%

Table 5.12: Respondent's response on the PMS implementation and improvement

5.11.10 Barriers in Implementing PMS

Respondents were also asked to select the problems that they faced in implementing PMS or, for those who do not implement PMS, the barriers that they perceived are potentially hindering the implementation of PMS in the FM service. Table 5.13 shows the list of barriers or problems in implementing PMS based on the ranks voted by the respondents. The proposed variables are derived from the literature review and categorised into 4 elements, namely Management, Employee, Formulation of Measures and Service Direction.

Results from Table 5.13 show that the top three problems identified in the implementation of PMS are rooted in Service Direction where most of the respondents are more focused on the short-term decision-making or goal only rather than considering the long-term goal. They were also more reliant on the software tool as the problem solution and most importantly they believed that lack of strategic planning skill in planning for the performance monitoring and evaluation is also the problem and barrier in implementing PMS. The respondents also provided some problems that are not listed but which they believed are among the contributing factors, for instance they believed that it is both time- and energy-consuming for managers to focus on the implementation of PMS and also to train employees. They also believed that they were much burdened with current workload and PMS is not something that they would want to look into. They further believed that the top management needs to give full support for the PMS implementation to ensure its effectiveness.

As for the formulation of measures, they had no idea of where to start and how to work on designing a PMS considering the lack of resources that they have. One of their responses was also that they were not clear regarding the long-term goal of PMS and the long-term benefits behind its implementation. In general, it can be seen that the lack of strategic planning, service direction and management skills and goals are the factors that hamper the implementation of PMS for FM in Malaysia. The scenario fits with the slow progress of FM development in Malaysia, where there is a lack of guidelines and procedures towards enhancing standard service delivery. The implementation of PMS as a strategic step forward is considered new and alien to the FM service sectors there, as the industry is still immature.

Rank	*Variables*	*Problems/ Barriers in Implementing PMS*
1	Service Direction	• *More focused on short-term decision making*
2	Service Direction	• *Rely on software as solution*
3	Service Direction	• *Lack of strategic planning skill*
4	Formulation	• *No proper sample or guidance*
5	Formulation	• *Problems identifying suitable measures*
6	Formulation	• *Difficulties in evaluating the relative importance of measures*
7	Service Direction	• *Lack of awareness and understanding on the importance of FM*
8	Management	• *Unclear of objectives and benefits*
9	Management	• *Inadequate training and support*
10	Management	• *Manager's resistance*
11	Management	• *Lack of senior management commitment*
12	Employee	• *Employee resistance to change*
13	Employee	• *Staff turnover and problems in reallocating new roles*
14	Employee	• *Reluctant to invest time and energy*
15	Employee	• *Lack of clarity/rationale*
16	Formulation	• *Striving for perfection*
17	Formulation	• *Unclear of the process and procedure involved*
18	Employee	• *Employee fear of status affected or stressful work conditions*
19	Management	• *Organisational fears*
20	Service Direction	• *Priorities in other management aspects*
21	Others	• *Time and energy consuming for managers to focus on*
	[Management]	• *Burdened with current workload* • *Need support from top management*
	[Employee]	• *Time-consuming to train employees*
	[Formulation]	• *Do not know where to start/starting point* • *Lack of resources*
	[Service]	• *Not clear about the long-term goals*

Table 5.13: Problems or barriers in implementing PMS

5.12 Pilot Study Conclusion

The overall survey findings show that the FM industry in Malaysia is still not fully developed and is yet to be up to par with FM industries in other countries. With the majority of FM practitioners still implementing operational FM and having no performance measurement system in their practice, the future of this industry in Malaysia is hard to predict. The industry appears to be passive, as it has seen little development since the first statement in 2001 by the then Deputy Prime Minister of Malaysia Datuk Seri Abdullah Badawi on the need for change in the provision of good services and improvements in the upkeep of buildings.

This study proposes a summary of the FM scenario in Malaysia based on the literature review and findings (refer to Figure 5.8). Generally, the overview of the FM scenario in Malaysia can be classified into seven sectors namely: level of growth, practice, service, profession, opportunities, demands and challenges. In summary, the FM scenario in Malaysia is still lacking an FM culture, is passive and is in need of radical changes in order to move forward. The implementation of traditional management, lack of understanding, no FM guidelines and standards are among the failures that continue to hamper the development of the FM industry in Malaysia. However, since FM is still a new subject in Malaysia, there is flexibility for different techniques and approaches for FM practice. There is also a strong outsourcing demand for FM as a third party, especially since the recent combination of outsourcing and privatisation by the government. As a final output of this research, PERFM is anticipated to improve the current scenario of FM generally and to improve the quality of service so the public will recognise the FM profession.

Although there is a limitation in the responses received for the preliminary study, the results have shown that the FM profession in Malaysia needs to be further addressed and studied. There is also a research gap in the literature about the FM industry in Malaysia and this study proposes to conduct a further study and analysis focusing on the FM profession and its service delivery.

The pilot study findings have shown that there is a need and opportunities for the scopes of PM and FM to be further explored in FM industry in Malaysia. It also

proves that Malaysia is an appropriate sample of study, given the lack of FM culture and lack of FM standards or guidelines regulated in the FM industry for the country. This also signifies the future research contributions to both academic and industry in studying the FM practice in Malaysia and developing a PM framework that can offer values and benefit to the FM industry.

FM IN MALAYSIA	
Level of Growth	Little encouragement from the government Poor root understanding Traditional management Lack of FM culture Low progress of key drivers
Practice	Undertaken by Real Estate firms FM practice is unrecognised No quality benchmarking measures Widely adopted by a single sector: healthcare Lack of holistic participation
Service	Low service quality Low standard of maintenance Lack of understanding Lack of technical knowledge and expertise No FM guidelines and standards
Profession	No accredited FM professional body FM specific job scope is not established Overlapping of job specification FM role is indefinite Lack of local expertise No organisation for FM development
Opportunities	New subject which is flexible for different techniques and approach practices To involve FM in construction's early phase: planning & design Cost increase require strategic planning Maintenance focus in densely populated cities Progressive changes in IT
Demands	Strong outsourcing demand (third party) Combination of outsourcing and privatisation Government's intention to improve public service delivery system Greater complexities of building facilities Social perceptions: buyers' and tenants' needs for well-maintained buildings Preference for computerised system by clients
Challenges	Late implementation of FM FM software development Funding support required to adopt an integrated system Space constraint for automation mechanism To cultivate FM environment with stakeholders

Figure 5.8: Summary of FM scenario in Malaysia

5.13 Chapter Summary

Literature that has been covered in the earlier part of this chapter gives a good understanding of a PM framework as to what needs to be focused and also the steps in selecting appropriate performance measures. The latter part demonstrates the pilot study survey conducted and findings derived from the analysis of the questionnaire survey to the respondents. The qualitative survey findings have contributed to the overall understanding of the PM and FM among the FM practitioners in support of the literature review. The information and results gathered from the survey analysis has also given a positive indication on a further exploration of both PM and FM aspects particularly in Malaysian context. The preliminary findings also denotes the demand of an innovate tool such as PERFM for the FM practice and industry advancement in Malaysia.

CHAPTER 6: RESEARCH METHODOLOGY

This chapter is divided into two parts, in which literature on theories and concepts of methodologies is presented first. Second, this chapter explores the selected research design for the study including the research methods and strategies of data collection and analysis adopted. By the end of this chapter, this section of the thesis will have successfully explained the rationale behind the selected methods and designs in order to justify the data analysis process in the next chapters.

6.1 Literature

In the first part of this chapter, literature on the philosophical theories, concepts, principles and approaches of the paramount elements in research methodology will be presented in order to develop an understanding of each subject. The subjects of the literature will involve the philosophical worldviews of the paradigm, selected strategies of inquiry, research design and research methods as proposed in a research method framework by Creswell (2009), as shown in Figure 6.1.

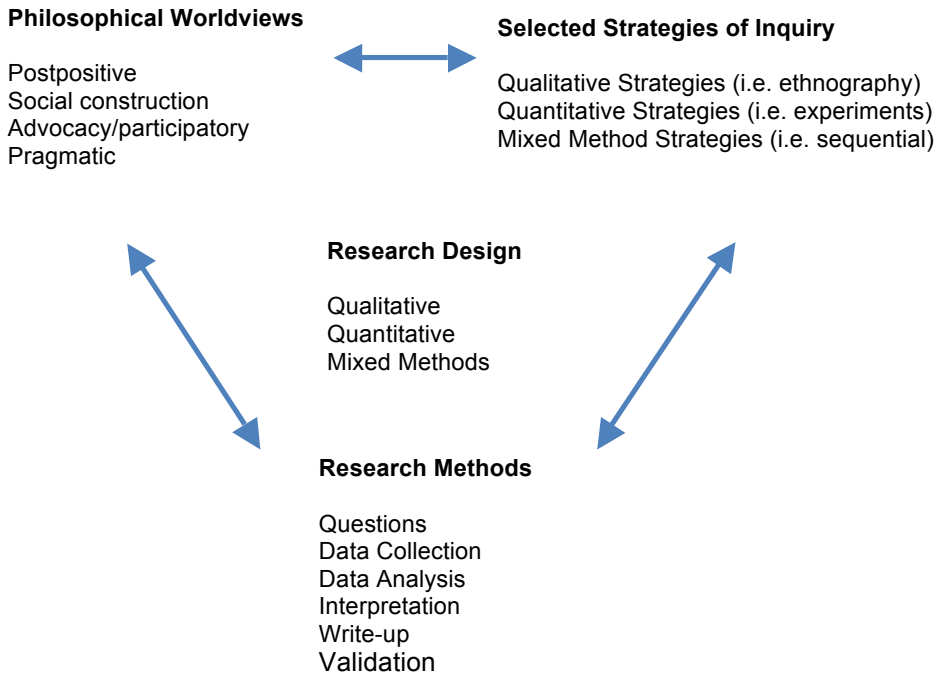


Figure 6.1: The framework of a research methodology
(*Source: Creswell, 2009)*

In the next part of this chapter, the framework or structure of the research methodology will be outlined and justifications to support the selection will be presented therein.

6.1.1 Paradigm

Paradigms are worldviews and beliefs about the nature of reality, knowledge and values (Schwandt, 1989) that guide researchers (Guba and Lincoln, 1994). Paradigm is a special form of concept, which has gained importance not only in social and related science but also in the philosophy of science, from where the influence on contemporary empirical research stems (Bergman, 2010). Similarly, Morgan (2007) sees paradigm as the consensual set of beliefs and practices that guide a field in science studies. Paradigms are frameworks for thinking about research design, measurement, analysis and personal involvement (Patton, 1982). A paradigm is also an organising framework, which contains the concepts, theories, assumptions, beliefs, values, and principles that inform a discipline on how to interpret subject matter of concern. The paradigm also contains the research methods considered best to generate knowledge and suggests that which is open and not open to inquiry at the time (Powers and Knapp, 1990).

Onwuegbuzie and Leech (2005) believe that research can be viewed from a unified perspective and Patton (1982) sees this in the value of making mind shifts back and forth between the paradigms. However, Schwandt (1989) disagrees, as he is not clear as to how such an astonishing feat is to be accomplished. Paradigm as a worldview means that it is seen as the ways of experiencing and thinking about the world, including beliefs on morals, values and aesthetics. It serves as a basic set of assumptions that guide researchers' actions and inquiries (Guba, 1990; Creswell, 1998; Creswell, 2009). This takes into account the personal view, experience, preferences and cultures in conducting the studies and how to make them work. Guba (1990) interprets worldview as a basic set of beliefs that guide actions. Others have called the beliefs as paradigm (Lincoln & Guba, 2000; Mertens, 1998); epistemologies and ontologies (Crotty, 1998), or broadly conceived research methodologies (Neuman, 2000).

6.1.1.1 The Postpositivist Worldview

The postpositivist worldview represents the traditional form of research and is sometimes called the 'scientific method' mainly because it is focused on qualitative research rather than quantitative research. The meaning behind postpositivist represents the thinking after positivism, challenging the traditional notion of the absolute truth of knowledge (Creswell, 2009). It holds a deterministic philosophy in which causes probably determine effects or outcomes. Thus, the problems studied by postpositivists reflect the need to identify and assess the causes that influence outcomes, such as are found in experiments (Creswell, 2009). It is also reductionist in that the intent is to reduce the ideas into a small, discrete set of ideas to test, such as the variables that comprise hypotheses and research questions. The concept of this worldview underlies the developing numeric measures of careful observations and studying the behaviour of individuals. This approach is based on the theory verification principle, as the researcher begins with a theory, collects data that either support or refute the theory, and then makes necessary revisions before additional tests are conducted.

6.1.1.2 The Social Constructivist Worldview

The social constructivist worldview is typically seen as an approach to qualitative research. Social constructivists hold assumptions that individuals seek understanding of the world in which they live and work. Individuals develop subjective meanings of their experiences - meanings directed towards certain objects or things. These meanings are varied and multiple, leading the researcher to look for the complexity of views rather than narrowing meanings into a few categories or ideas (Creswell, 2009).

The qualitative method can be seen in this approach, where the research questions become broad and general so that the participants can construct the meaning of a situation, typically forged in discussions or interactions with other person. This is based on the intention to interpret the meanings others have about the world. The more open-ended the questioning, the better, as the researcher listens carefully to what people say or do in their life settings. Often the subjective meanings are negotiated socially and historically. It is called social constructivism as the meanings are not simply imprinted on individuals but are formed through interaction with others, and through historical and cultural norms that operate in individuals' lives.

Constructivist researchers often address the processes of interaction among individuals. They also focus on the specific contexts in which people live and work, in order to understand the historical and cultural settings of the participants. They also recognise that their own backgrounds shape their interpretation, and they position themselves in the research to acknowledge how their interpretation flows from their personal, cultural and historical experiences. As opposed to starting with a theory (as in postpositivism), inquirers generate or inductively develop a theory or pattern of meaning, or in other words, a theory generation (Creswell, 2009).

6.1.1.3 The Advocacy and Participatory Worldview

The advocacy and participatory studies often begin with an important issue or stance about the problems in society, such as the need for empowerment. Empowerment, along with other subjects like inequality, oppression, domination, suppression and alienation, is normally addressed as the focal point of the study. This type of worldview is seen more in qualitative research than in quantitative research. It typically begins by addressing any of the subjects of empowerment. The focus of this worldview is on the needs of groups and individuals in our society that may be marginalised or disenfranchised. It believes that research inquiry needs to be intertwined with politics and a political agenda in the aim of creating a political debate and discussion so that changes can be made. It also believes that what is at fault in the postpositivist worldview is that the postpositivist assumptions imposed structural laws and theories that did not fit marginalised individuals in our society or issues of social justice that needed to be addressed.

The advocacy and participatory researchers also believe that they can help individuals to free themselves from constraints found in the media, in language, in work procedures, and in the relationships of power in educational settings (Creswell, 2009). This also differentiates this approach from the constructivist worldview, whereby the constructivist stance did not go far enough in advocating for an action agenda to help marginalised people. As the strength of this worldview is in the aim of the researchers to bring change into practice, an agenda for further action is normally advanced at the end of the research. Therefore, this type of study is seen as practical and collaborative as it forwards action for change and also engages the participants as active collaborators in the study.

6.1.1.4 The Pragmatic Worldview

The pragmatic worldview arises out of actions, situations, and consequences rather than antecedent and conditions (as in postpositivism). Pragmatism is not committed to any one system of philosophy and reality. This applies to mixed methods research in that inquirers draw liberally from both quantitative and qualitative assumptions when they engage in their research. As a philosophical underpinning for mixed method studies, this type of worldview is important for focusing attention on the research problem in social science and then using pluralistic approaches to derive knowledge about the problem (Morgan, 2007).

Pragmatists agree that research always occurs in social, historical, political and other contexts. In this way, mixed method studies may include a postmodern turn, or a theoretical lens that is reflective of social justice and political aims. There is a concern with applications pertaining to what works and what are the solutions to problems (Patton, 1990). Instead of focusing on methods, researchers emphasise the research problem and use all approaches available in order to understand the problem (Rossman and Wilson, 1985).

Pragmatist researchers look to what are the scopes and subjects of research and how to conduct the research, based on the intended consequences - where they want to go with it. Mixed method researchers need to establish a purpose for their mixing, a rationale for the reasons why quantitative and qualitative data need to be mixed in the first place. Individual researchers have a freedom of choice. Researchers are free to choose the methods, techniques, and procedures of research that best meet their needs and purposes. In this respect, pragmatists do not see the world as in absolute unity. In a similar way, mixed methods researchers look to many approaches for collecting and analysing data rather than subscribing to only one way - that is, either quantitative or qualitative. The investigators use both qualitative and quantitative data because they work to provide the best understanding of a research problem.

A pragmatic approach would place its emphasis on shared meanings and joint action and also retains many of the virtues of the previous system (Morgan, 2007). Therefore, it is reviewed as a specific justification for combining qualitative and quantitative methods (Johnson and Onwuegbuzie, 2006). As for the mixed methods researcher, pragmatism opens the door to multiple methods, different worldviews,

different assumptions, and different forms of data collection and analysis as well as offering new opportunities.

Morgan (2007) proposed a summary of the pragmatic approach with the other two important methodological stances in the social sciences: qualitative and quantitative research (refer to Figure 6.2).

Research Elements	***Qualitative Approach***	***Quantitative Approach***	***Pragmatic Approach***
Connection of theory and data	Induction	Deduction	Abduction
Relationship to research process	Subjectivity	Objectivity	Intersubjectivity
Inference from data	Context	Generality	Transferability

Figure 6.2: Approaches of the three methodological stances (*Source: Morgan, 2007*)

The new insights of the pragmatic approach can be seen in the connection of theory and data, relationship to research and process, and also the inference from data. The pragmatic approach underlies the abductive reasoning that connects induction and deduction by converting observations into theories and then assessing those through action. As induction promotes the use of theories to account for observations, in the pragmatic approach abduction assesses the conclusions through actions. This benefits the researchers in mixed methods as the inductive results from the qualitative approach serve as inputs to the deductive goals of the quantitative approach, and vice versa.

Looking from the perspective of the relationship between the researcher and the research process, the pragmatic approach promotes the intersubjective concept in the idea that a piece of research may work back and forth between various frames of references, and emphasises that knowledge can be created through lines of action points to the joint actions that different researchers can pull together. The pragmatic approach also supports the idea that research results are not specific to a particular context or a set of generalised principles. This also gives the results a position where the gained knowledge can be transferred to other settings. Therefore, the pragmatic approach can be seen as an alternative approach that offers new settings based on its concept on the abductive, intersubjective, transferable aspects of a piece of research.

The pragmatic approach not only supports the kinds of research methods that this study advocates but also provides a basis for reorienting the field of social science research methodology in the appropriate direction. The great strength of this approach to social research methodology is its emphasis on the connection between epistemological concerns about the nature of the knowledge that we produce and technical concerns about the methods that we use to generate that knowledge (Morgan, 2007).

6.1.2 Debates of Paradigm

There was a debate between the two paradigms which was sometimes called the qualitative-quantitative debate (Reichardt and Rallis, 1994). Several conceptual issues were raised in the debate, namely the nature of reality or the possibility of causal linkages, and no discipline in social and behavioural sciences has avoided manifestations of these paradigm wars (Tashakkori and Teddlie, 2008). There were debates on the strength of the positivist paradigm focusing on the quantitative methods and constructivist underlying qualitative methods. According to Tashakkori and Teddlie (2008), numerous attempts were made in the social and behavioural sciences to find the solutions and consensus between these two major paradigmatic principles.

The term ‘mixed-up models’ was yet to be fully articulated back in 1994; however, Datta (1994) suggested that it was derived from the lack of worldview, paradigm, or theory for mixed-model studies. He further argued that the preceding methodologies way before the paradigm wars were proved to have been used years before that and also have influenced policy and been supported by a lot of funding agencies. Pragmatism is the new paradigm being put forward, which has the elements of both quantitative and qualitative approaches or is also simply referred to as the mixed methods approach (Patton, 1990). The shift of previous paradigms to a pragmatic approach also promoted the thinking of how research in social sciences is conducted (Morgan, 2007). The positive outcome of the revolution of the paradigm battle or wars is that most researchers at present ensure that they adopt one specific method for their research.

6.1.3 Research Design

Research design shapes the direction of the research by looking at how to conduct the research, weighing the intersection of philosophy and also selecting the strategies of inquiry. The research question drives the methodological approaches or choices (Tashakkori & Teddlie, 2003). In planning a study, the researcher needs to think through the philosophical worldview assumptions that they bring to the study, the strategy of inquiry that is related to this worldview, and the specific methods or procedures of research that translate the approach into practice (Creswell, 2009). Newman and Benz (1998) also signify the importance of selecting the appropriate research method for a piece of research.

There are three types of research designs from which researchers can choose accordingly: quantitative approach, qualitative approach or mixed methods approach. The first approach, qualitative, was introduced in around the 19th century. Research paradigms like ontological, epistemological, axiological, rhetorical and methodological assumptions and principles (Leech and Onwuegbuzie, 2009) also emerged at this time. Secondly, the quantitative paradigm was adopted between 1900 and 1950 by many researchers who were interested in the quantitative approach (Denzin and Lincoln, 2000). Shortly after that, in the 1960s, the concept of mixing the two said approaches was introduced and since then the mixed method became popular among the researchers (Rocco *et al*., 2003).

From that point forward, the mixed methods approach was used in various and numerous research works, including social science studies. It started gaining recognition despite the fact that there were some debates on the practicality of the approach (Tashakkori and Teddlie, 2003). A brief summary of the three different approaches was outlined by Tashakkori and Teddlie (2009), as shown in Figure 6.3.

Dimensions	Qualitative (QUAL) Position	Mixed Methods (MM) Position	Quantitative (QUAN) Position
Methods	Qualitative methods	Mixed methods	Quantitative methods
Researchers	QUALs	Mixed methodologists	QUANs
Paradigms	Constructivism (and variants)	Pragmatism; transformative perspective	Postpositivism Positivism
Research questions	QUAL research questions	MM research questions (quantitative plus qualitative)	QUAN research questions; research hypotheses
Form of data	Typically narrative	Narrative plus numeric	Typically numeric
Purpose of research	(Often) exploratory plus confirmatory	Confirmatory plus exploratory	(Often) confirmatory plus exploratory
Role of theory; logic	Grounded theory; inductive logic	Both inductive and deductive logic; inductive-deductive research cycle	Rooted in conceptual framework or theory; hypothetico-deductive model
Typical studies or design	Ethnographic research designs and others (case study)	MM designs, such as parallel and sequential	Correlational; survey; experimental; quasi-experimental
Sampling	Mostly purposive	Probability, purposive, and mixed	Mostly probability
Data Analysis	Thematic strategies: categorical and contextualising	Integration of thematic and statistical; data conversion	Statistical analyses: descriptive and inferential
Validity/trust worthiness issues	Trustworthiness; credibility; transferability	Inference quality; inference transferability	Internal validity; external validity

Figure 6.3: Three types of research design
(*Source: Teddlie and Tashakkori, 2009*)

6.1.3.1 Quantitative Approach

The quantitative approach provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population. It includes cross-sectional and longitudinal studies using questionnaires or structured interviews for data collection, with the intent of generalising from a sample to a population (Babbie, 1990). It is also best when the problem calls for the identification of a factor that influences an outcome, the utility of an intervention, or the need to understand the best predictors of an outcome. It is also the best approach to test a theory or explanation.

6.1.3.2 Qualitative Approach

The numbers and types of approaches have also become more clearly visible during the 1990s and into the 21st century (Creswell, 2009). For example, case studies are a strategy of inquiry in which the researcher derives a general, abstract theory of a process, action, or interaction grounded in the views of participants. This process involves using multiple stages of data collection and the refinement and interrelationship of categories of information (Charmaz, 2006).

If a concept or phenomenon needs to be understood because little research has been done on it, then it merits a qualitative approach. Qualitative research is exploratory and is useful when the researcher does not know the important variables to examine. This type of approach may be needed because the topic is new; that is, the topic has never been addressed with a certain sample or group under study (Morse, 1991).

6.1.3.3 Mixed Methods Approach

The mixed methods approach is based on the concept of combining both qualitative and quantitative approaches. The concept of mixing different methods originated in 1959 when Campbell and Fiske used multimethods to study the validity of psychological traits. They encouraged others to employ their multimethod matrix to examine multiple approaches to data collection. This prompted others to mix methods, and soon approaches associated with field methods, such as observations and interviews' quantitative data were combined with traditional surveys' quantitative data (Sieber, 1973). Altough Tashakkori and Teddlie (2003) believe that the mixed method approach has started gaining popularity, Creswell (2009) thinks that it is still less well known than either the quantitative or qualitative approaches. Despite this, mixed methods also appear to play a significant role in social change. This is supported by Mertens' (2011) work, in which studies in communities using a mixed methods approach have the potential to address persistent inequalities and challenging social conditions. This can be achieved by an exploration of both the study's strength and challenges through multiple methods. Mertens (2011) also believes that, if both quantitative and qualitative data are included, this will help to facilitate the responsiveness of different participants and issues.

However, recognising that all methods have limitations, researchers felt that biases inherent in any single method could neutralise or cancel the biases of other methods. Triangulation data source method - a means for seeking convergence across qualitative and quantitative methods - was born (Jick, 1979). In the early 1990s, the idea of mixing moved from seeking convergence to actually integrating or connecting the quantitative and qualitative data. For example, the results from one method can help identify participants to study or questions to ask for the other method (Tashakkori and Teddlie, 1998). Alternatively, the qualitative and quantitative data can be merged into one large database or the results can be used

side by side to reinforce each other (i.e., qualitative quotes support statistical results; Creswell and Clark, 2007). Or the methods can serve a larger, transformative purpose to advocate for marginalised groups, such as women, ethnic/racial minorities, members of gay and lesbian communities, people with disabilities and those who are poor (Mertens, 2003). These have led to various developments of procedures for mixed methods strategies of inquiry, and these take the numerous terms found in the literature, such as multimethod, convergence, integrated and combined (Creswell and Plano Clark, 2007), and shape procedures for research (Tashakkori and Teddlie, 2003).

There are three general strategies within the mixed methods approach: the sequential mixed methods, concurrent mixed methods and transformative mixed methods. According to Creswell (2009), mixed methods research is relatively new in the social and human sciences and there are many different terms used for this approach, such as integrating, synthesis, quantitative and qualitative methods, multimethod, and mixed methodology; but recent writings since 2003 use the term mixed methods (Bryman, 2006; Tashakkori and Teddlie, 2003). A more integrated approach was called for to cater for researchers' needs to combine methods in their investigations (Brewer and Hunter, 1989). This involved the labelling of multiple methods, namely monomethods, mixed methods, multimethod research, methodological mixes, triangulation of methods and a lot of others (Tashakkori and Teddlie, 2008). The evolution of a few types of methodological approaches was more focused on the monomethed, mixed methods and mixed model studies (Tashakkori and Teddlie, 2008). A summary of the mixed methods criteria is shown in Figure 6.4.

Tend to or Typically	***Mixed Methods Approaches***
Use these philosophical assumptions	• Pragmatic knowledge claims
Employ these strategies of inquiry	• Sequential, concurrent and transformative
Employ these methods	• Both open- and closed-ended questions, both emerging and predetermined approaches, and both quantitative and qualitative data and analysis
Use these practices of research as the researcher	• Collects both quantitative and qualitative data • Develops a rationale for mixing • Integrates the data at different stages of inquiry • Presents visual pictures of the procedures in the study • Employs the practices of both qualitative and quantitative research

Figure 6.4: The mixed methods approaches

6.2 Research Study Framework

Figure 6.5 shows the research study framework for this research, which looks at the research design elements, namely the philosophical worldview, strategies of inquiry, research methods, data collection method, and data analysis. Further elaboration on each element with the respective mixed method approach application is detailed in the following subsections.

Research Design	***Mixed Method***
Philosophical Worldview	Constructivism
Methodology	Grounded theory
Research Methods	(1) Research Questions (2) Literature Review (3) Data Collection (4) Data Analysis (5) Interpretation (6) Writing up
Data Collection Techniques	(1) Qualitative pilot study questionnaire survey (2) Qualitative - case studies and interviews
Data Analysis	(1) Quantitative analysis (2) Qualitative analysis

Figure 6.5: The research study framework

This study adopts the qualitative approach and the suitable philosophical worldview, which is constructivism. Qualitative approach can provide insight, which is not possible to elucidate with purely quantitative methods (Lemanski and Overton, 2011). They further described qualitative approach as a means for exploring and understanding the meaning individuals or groups ascribe to a social or human problem. The process of research involves emerging questions and procedures data typically collected in the participant's settings. According to Matthews (1993) constructivism approach holds the view that humans generate and construct their own knowledge and understanding from their interactions with the world around them. The qualitative method is believed to be appropriate in helping researcher to better explore and understand the research problem and analysis findings, given the complexity and especially the large volume of the data from each case study.

The principle of this research matches with the approach of the grounded theory as the theoretical framework of this qualitative study. The data were gathered and

analysed and the theory derives from the data. The concept is in contrast to frameworks that put together a theory from a series of observations or concepts and then gather data to test theory (Lemanski and Overton, 2011). Flick *et al*. (2004) that grounded theory develops theories that are closer to reality.

The data collection techniques carried out for the research were staged into three phases: Phase 1 qualitative questionnaire survey for the pilot study, Phase 2 case studies and Phase 3 interviews. The principle of this research is an inductive qualitative research method. It started with collecting data in the field and lets the theory emerge or emanate from the data. Dunican (2005) believes that the theory is actually grounded in the data. Dunican further signifies that the net outcome of grounded theory research is a theory that containes a central phenomenon, its causal conditions, its intervening conditions and its consequences. The grounded theory constructivist approach in building theory from collecting data is demonstrated in the qualitative data collection techniques, where the findings of the Phase 1 quantitative analysis are aimed to help in shaping a detailed view of performance measures collected in Phase 2 of the study. At first, the exploration in Phase 1 was to understand the targeted population or sample and to learn what variables in FM to study, which is PM and their measures, and then proceed to the study of those variables in Phase 2 with a large and focused targeted case study. In these situations, collecting both closed-ended and open-ended qualitative data proves advantageous. Phase 3 interviews were conducted as an evaluation of the PERFM developed from the summary of literature and data collected in Phase 2. The final evaluation provides feedback on the developed PERFM, which includes the theory that has been built from the data collected.

6.2.1 Inductive Grounded Theory

A theory is an interrelated set of constructs or variables formed into propositions, or hypotheses, which specify the relationship between variables. A theory might appear in a research study as an argument, a discussion, or a rationale, and it helps to explain or predict phenomena that occur in the world. The theories help to form the framework or structure for the study to better understand the research problem and also serve as the bridge among the variables. In inductive theory, the end theories or some other broad explanation becomes the end point. This approach is distinct from the theoretical orientation. It is an inductive process of building from the

data to broad themes to a generalised model or theory. It also applied the principle of theoretical lens or perspective, where the orientation of gender, class, race and experiences are considered in the data collection.

The objective of Phase 1 of the qualitative data collection in this study is to have an understanding of the FM industry in Malaysia; and the implementation of the questionnaire survey was aimed at looking at the knowledge of FM among the FM practitioners and also to test the variables from the literature in obtaining a better understanding of the FM industry in that region. Based on Creswell's (2009) proposed structure, this theory becomes a framework for the first objective, an organising model for the research questions or hypotheses and for the data collection procedure. The researcher began by gathering detailed information to compile a set of literature and variables of the scopes of study and then formed this information into categories or themes. The variables were then tested on the participants through Phase 1 qualitative questionnaire survey and Phase 2 case studies (refer to Figure 6.6). Data collected were then analysed quantitatively to form themes or categories. The findings were used to help the researcher in developing themes into broad patterns, theories, or generalisations that were then compared with personal experiences or with existing literature on the topic. Phase 3 interviews were conducted to evaluate the values of the final output that was constructed based on the findings from Phase 1 and 2. The development of themes and categories into patterns, theories, or generalisations suggests varied end points for qualitative studies (Stake, 1995). By interpreting the findings, the theories from both literature and data analysis are proposed as the novel point of the research. The inductive qualitative approach is demonstrated in the systematic approach for analysing qualitative data where the analysis is guided by specific objectives. The underlying used of a general inductive approach is therefore proved,

According to Schwandt (1993), all qualitative studies must begin with pure observation, and prior conceptual structure composed of theory and method provides a starting point for all observations. Some qualitative studies do not employ any explicit theory, but Creswell (2009) contended that, in this case, the inquirer needs to construct a rich and detailed description of a central phenomenon. This is reflected in the literature study pertaining PM, FM and PM in FM with a specific focus given to Malaysian context.

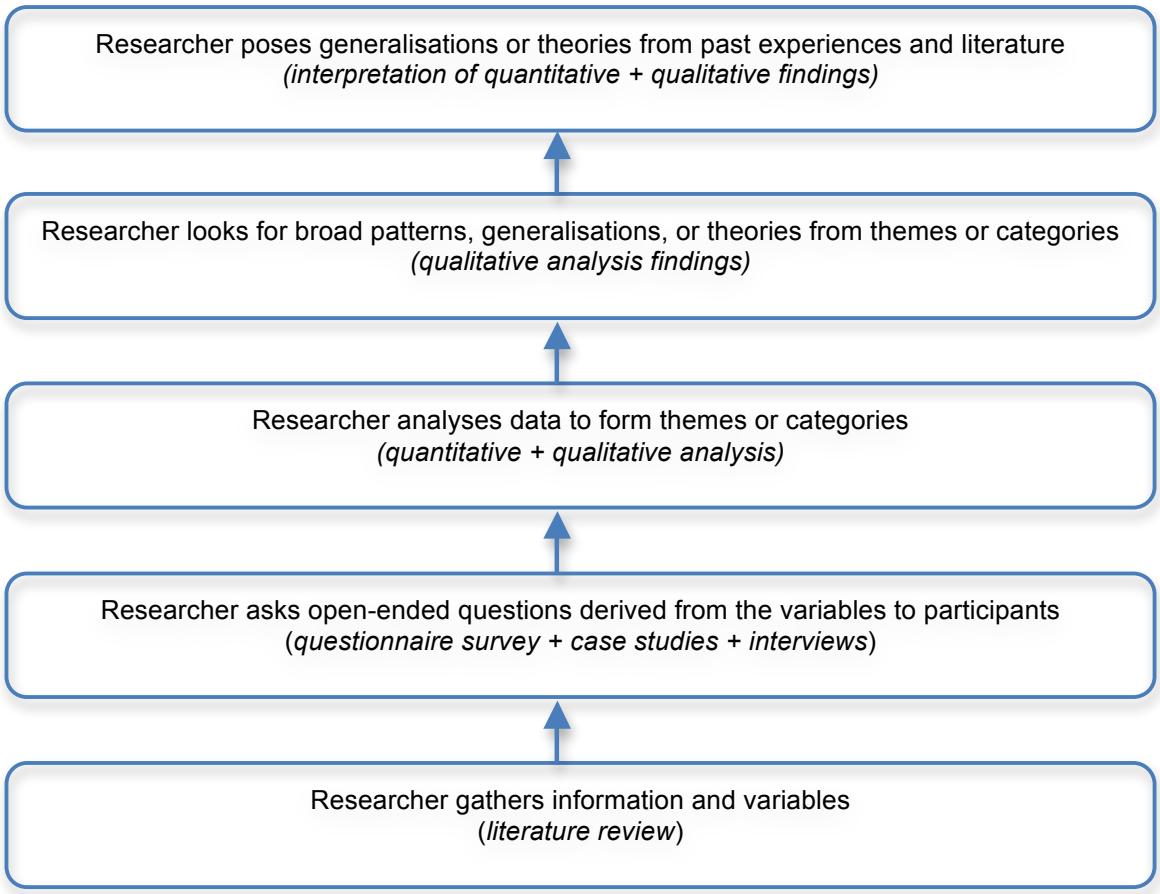


Figure 6.6: The inductive approach applied in this research

6.2.2 Research Methods

In general, the flow of this study's research methods commenced with the formulation of research questions derived from the research problem. The literature review then took place with specific focus given to two major scopes, namely FM and PM. In the literature review, theories, principles and concepts of the two scopes are reviewed and explored. Data collection is based on qualitative methodology. As for the data analysis, the data from Phase 1 were analysed quantitatively to produce the significant numerical results. Data from the qualitative method used in Phase 2 were analysed qualitatively. The next step was to interpret the results and findings from the analysis and relate them back to the main aim and objectives of the study methodology, findings and conclusion. Interpretations were made on the statistical results and the themes or patterns that emerged from the data. At the final stage, which is Phase 3, data from the interviews of Malaysian FM practitioners were analysed qualitatively. Once the data were interpreted, the writing up process of the study began with the focus given to linking up the objectives, literature, analysis and conclusion.

6.2.2.1 Questionnaire Survey

A survey design provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population. The purpose of survey research is to generalise from a sample to a population so that inferences can be made about some characteristics, attitude or behaviour of this population (Babbie, 1990). A survey also gives advantages in identifying attributes of a large population from a small group of individuals (Fowler, 2002) and also provides a rapid turnaround in data collection. The survey design of the study was based on a longitudinal approach where the data was collected over time.

The questionnaire survey begins with the identification of sample size for the FM practitioners in Malaysia. This was conducted by approaching the Construction Industry Development Board (CIDB) Malaysia, an organisation that is in charge of the registered companies and organisations pertaining construction and maintenance. An approach was also made to the Malaysian Association of FM (MAFM) with the same objective that is to get a full registered list of companies and organisations that registered for the provision of FM services. Unfortunately, there is no complete registered list of FM service providers being held and compiled by them that can be used for the sampling calculation and justification purposes. A list of random organisations that implement maintenance and FM services were provided only by the CIDB to the researcher, which was used as the master list for the researcher to approach the participants for both questionnaire survey and case studies data collections.

The researcher has approached the 142 companies that were compiled in the list and only 37 responses received, with only 35 responses valid for analysis. Considering the lack of awareness and recognition of FM practice in Malaysia, the responses received from the participants are believed to be significant in leading this research to move forward. Retrospectively, the lack of compilation of the registered FM practice in Malaysia and the number of responses received confirm the low progress and awareness of FM in Malaysia.

6.2.2.2 Case Studies

The data analyses were conducted in three phases based on guidelines suggested by Miles and Huberman (1994):

(i) *Phase 1: Documenting and Coding the Data*
Relevant information was extracted from all the documents and archival records and coded accordingly

(ii) *Phase 2: Data Display*
The data analysis displayed the data in an easy to understand form and comparison tables were also established. Charts were also produced to highlight the result trends.

(iii) *Phase 3: Conclusion Drawing*
The conclusions were then drawn based on the objectives and findings of the research

The case studies data collection technique as it draws the qualitative research paradigm aiming to understand the complex systems being used by the FM organisations both in UK and Malaysia. Case studies method is believed to be the most appropriate technique in emphasising the detailed contextual analysis of all the FM services provided, principles and approaches of the PM designs and the performance measures being used. This method is used to examine the significant differences of the mentioned aspects between two groups of FM organisations from both UK and Malaysia.

Case studies method was conducted following the objective derived from the research problem and research questions. It seeks to understand the various approaches adopted by the selected FM organisations. The selection of FM organisations was made randomly by approaching the FM organisations in Klang Valley as listed by the CIDB. Based from the invitation to participate distributed to the organisations, only 8 FM organisations agreed to participate with 2 representatives each from four different categories- healthcare, retail, finance and office buildings. Then, the same number of 8 case studies was also determined for the UK case studies to ensure that equal comparison can be made accordingly.

6.2.2.3 Interviews

Interviews is another qualitative data collection technique or method used in Phase 3. The aim of the interviews is to get feedbacks from FM practitioners of the participating organisations in Phase 2 case studies pertaining the developed PERFM. The semi-structured questions developed for the interviews were focused and clear to encourage open-ended responses. This group interviews is conducted based on the key questions that help to define the evaluation of PERFM that this research seeks to explore. The nature of interviews allows both interviewer and interviewee to diverge in order to pursue an idea or response in more detail. The semi-structured interviews is flexible as it allows the discovery or elaboration of information that is important to participants but may not have been previously been thought of as pertinent by the research team (Gill *et al*., 2008).

The purpose of the interviews was to explore the views on the specific aspects of the PERM, based on their beliefs, motivations and experiences especially in the FM industry. The detailed insights obtained from the interviews are imperative in the assessing the usability and flexibility of the PERM if implemented in the FM industry in Malaysia. The selection of the participants was based on the key players that have involved in the earlier phase of data collection. This facilitates the conduct of the interviews, as the interviewees were well informed of the purpose of this research and the process that had been undertaken in the earlier stages. They also understood the key elements that this research were exploring and has successfully provided the feedbacks needed to improve the developed PERFM.

6.2.3 Ethical Consideration

6.2.3.1 Data Collection Techniques

The data collections in Phase 2 and 3 comprised interviews, documentation and observation. Kvael (2007) signifies that interview in the qualitative approach is seen as a moral inquiry. Therefore, this study considers the following elements: how the interview will improve the human situation as well as enhance scientific knowledge, how a sensitive interview interaction may be stressful for the participants, whether participants have a say in how their statements are interpreted, and how critically the interviewees might be questioned and what might be the consequences of the interview for the interviewees and the groups to which they belong. In this respect,

the interviewer would also conduct the interview sessions as per participants' preference including whether they agree to be audio-recorded or otherwise.

6.2.3.2 Data Analysis and Interpretation

Another critical issue that needs ethical consideration is one of data analysis and interpretation. The researcher has ensured that all data are kept in a password-protected device, which can only be accessed by the researcher and the research supervisor. As agreed by the participants, once the data has been analysed, it needs to be kept for five years. Sieber (1998) suggested that a reasonable period of time would be between five and ten years. The researcher would then discard the data so that it does not fall into the hands of other researchers who might misappropriate it.

6.2.4 Data Analysis in Qualitative Research

Creswell (2009) has suggested a linear set of data analysis methods comprised of various interrelated stages, which became the framework in analysing the qualitative data in this study. In this research, the raw data collected in the form of field notes were gathered together and sorted according to the respective case studies (refer to figure 6.7). In organising and preparing data for analysis, all the field notes and documents provided by the case studies' participants were typed up and arranged accordingly. Next, all the data were read through to obtain the general sense of the information and to reflect on their overall meaning. This helped in acquiring the impression of the overall use of the information for the next stage. Detailed analysis of the data then started with the coding process. This involves coding the data on the computer by naming the data into variables, labelling categories and also assembling the data material belonging to each category in order to perform the analysis. Description of the data - for instance, the information of the case studies and participant settings together with themes - were identified. When the data are grouped under several categories that will provide major findings, it is also an indication that the themes have been identified properly. The next stage is the interrelating of themes and descriptions identified across all the samples. Detailed discussions on the descriptions and themes were presented before they were interpreted accordingly. During the interpretation process, the meanings of the data

were processed, taking into account the understanding of the literature and the findings, in order to deliver an in-depth analysis of the cases.

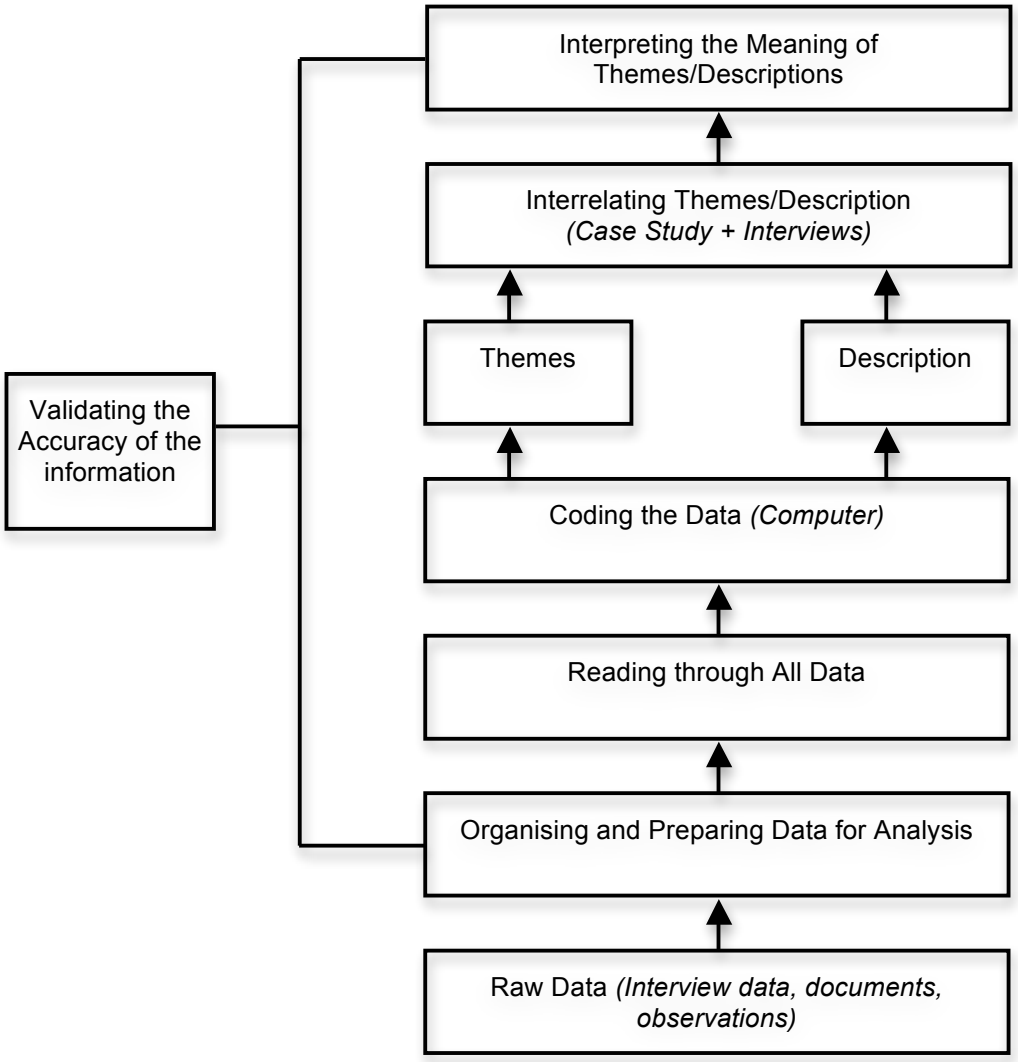


Figure 6.7: Data analysis in qualitative research
(*Source: Adopted form Creswell, 2009*)

6.2.5 Reliability and Validity of Data

Validity is one of the strengths of the qualitative approach and Yin (2003) feels that qualitative case study results can be generalised to some broader theory. The qualitative approach focuses on the process that is occurring as well as the product or outcome (Miller, 1991). The cycle of the same flow and process shows that validation occurs throughout the steps in the process of this research. Creswell (2009) suggested that qualitative validity means that the researcher checks for the accuracy of the findings by employing certain procedures. On the other hand, qualitative reliability indicates that the researcher's approach is consistent across different researchers and different projects (Gibbs, 2007). This can be done by

making sure that there is no shift in the meaning of codes during the process of coding, which can be achieved by constantly checking on the data and codes during the process. Yin (2003) also suggested that systematic documenting of the case studies procedures and setting up the detailed case study protocol and database were important in shaping reliable and consistent approaches. The validation for qualitative data also adopts the triangulation principle where the data come from various sources: interview data, documents and also observations. This triangulation examines evidence from the sources and uses it to build a coherent justification for themes. As themes are established based on converging several sources of data or perspectives from participants, then this process can be claimed as adding to the validity of the study (Creswell, 2009).

As the data are also analysed quantitatively, then the validity and reliability tests carried out in the analysis process determine the significance of the two factors respectively. It is anticipated that the triangulation or multiple data collection and analysis used in the study also strengthens the reliability as well as internal validity (Merriam, 1988) of the research. This study also uses a detailed and good description to convey findings. This is to ensure that the understanding of the setting, themes and discussions is delivered appropriately. Therefore, the findings and results become clearer and more realistic and add value to the validity of the findings. The researcher also made sure that there was no bias in interpreting the data and results from the cases.

6.2.6 Data Collection Setting and Design

The qualitative case studies in Phase 2 were divided into two groups. The first group was of eight organisations in Malaysia and second group was of eight organisations in the UK. As for Phase 3, the interview participants were all from Malaysia, and therefore can be put under the same group. The sampling design of all phases is cluster sampling. Cluster sampling is ideal when it is impossible or impractical to compile a list of the elements comprising the population (Babbie, 2007). In the clustering procedure of Phase 1, an online survey link was randomly distributed to the FM practitioners in Malaysia. Then, for Phase 2, the researcher first identified clusters of the FM companies in those regions, Malaysia and the UK, and then selected the case studies randomly within those clusters and then took samples

from within them. In Phase 3, the interview participants were selected from the Malaysian case study organisations, which was conducted in Phase 2.

6.2.7 Primary Data Collection Instruments

Case studies method is the primary source of data collection of this research as it explores the main element of the research objectives, which is to understand the performance measures being used in the industry by the FM organisations in the UK and Malaysia. The case studies method compiles the PM approaches and elements adopted by all the organisations particularly the purposes, principles, formulation of measurement, measurement, implementation, quality assessment and report. These elements were compared across all four categories- healthcare, retail, finance and office buildings.

The scope of this case studies method was also on the PM structure of both management and operations services. The case study organisations were compared in term of their respective implementations of performance measures- whether they comprise of all aggregative levels such as parameters, metrics, indicators and attributes as well as the performance formula or targets. The compiled performance measures were used as a ground in understanding the differences of key elements in the FM services practised between the FM practitioners in UK and Malaysia. The approaches adopted by FM organisations in the UK demonstrate a group of comprehensive and detailed set of performance measures, which this research used in developing the PERFM. The practised performance measures in the UK industry were compiled along with the principles and approaches form the literature review, creating a solid base in proposing the appropriate set of performance measures in the PERFM.

6.3 Chapter Summary

In this chapter, this research concludes that the qualitative research methods that have been adopted throughout the whole process of this study. It explains further on the justification of each data collection technique comprising of qualitative questionnaire survey, case studies and interviews throughout all three phases of data collection. It has also been emphasised that the constructivist grounded theory approach matches with the aim and objective of this research, and this is demonstrated with the building up of theory from the literature review and data

collection process. In the next chapter, a further overview of the case study organisations and also the findings derived from the case studies analysis are presented.

CHAPTER 7: CASE STUDIES DATA ANALYSIS

This chapter focuses on the analysis of the case study data from the Phase 2 data collection. The chapter starts by introducing the background of both case studies from Malaysia and the UK. Then, it narrows down to the study of the FM scope of services across all the case study organisations. Focuses are also given to the elements of PM indicators, PM structures and the comparison of PM designs between both Malaysian and UK organisations. This chapter aims to present the data from both groups of case studies, Malaysia and the UK, in regard to their approaches in FM and PM respectively.

7.1 Introduction

In this chapter, the distinctive elements of FM and PM are analysed and discussed within the context of case study organisations:

(i) FM service scope – the provision of a range of FM services by different categories: healthcare, retail, finance and office buildings

(ii) The elements of PM, PM structure and design - the differences and uniqueness of approaches and methods adopted in respective organisations

Yin (2003) signifies that an embedded case study design contains multiple units of analysis. Data collection in this research was guided by a case study protocol involving in-depth study of the PM implementation by analysing the archival records, documentation process and service level agreements (SLAs), and through an interview process with the FM managers. The researcher also worked hand-in-hand with the FM teams to gather the best understanding in compiling robust and valid data consistently across all the case studies. Follow up works were undertaken to clarify some uncertainties in the acquired knowledge of the data.

7.2 Background of Case Studies

The study samples are collected from two different regions, Malaysia and the UK. The units of analysis are eight organisations each from these two regions. Two cases represent each region across the four categories respectively: healthcare, retail, and finance and office buildings. This gives a total of 16 case studies for the

data analysis of Phase 2 data collection (refer to Figure 7.1). The names of the case studies are not revealed, as requested by the participants, in order to keep their identity confidential. This is because most of the data provided are considered critical information, which could reflect on their business identity.

Categories	Malaysian Organisations	UK Organisations
Healthcare	2	2
Retail/Commercial	2	2
Finance	2	2
Office Buildings	2	2
Total	8	8

Figure 7.1: Case study sample from Malaysia and the UK

7.2.1 Malaysian Case Studies

(a) Case 1 – Case Healthcare (CH1)

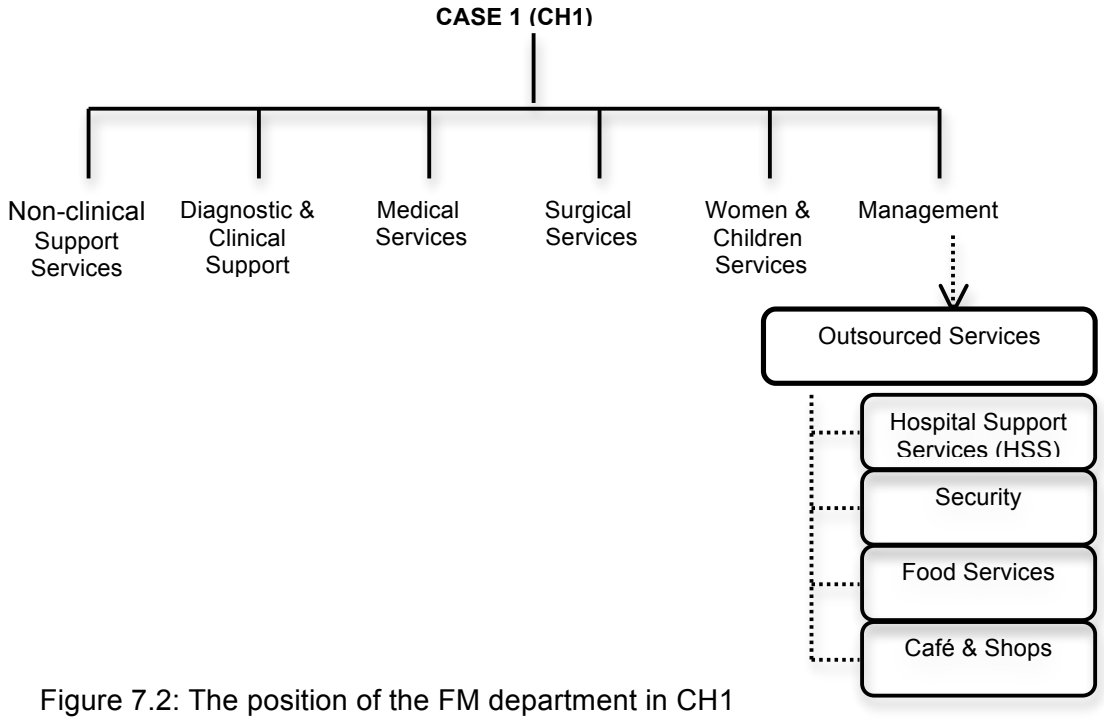


Figure 7.2: The position of the FM department in CH1

CH1 is a public hospital that is situated in the state of Selangor. Generally, it serves an approximate population of 1100 inpatients and 1600 outpatients on a daily basis. FM service is comprised of four categories: hospital support services, security, food services, café and shops. These services are positioned under the Outsourced

Services department. This department support the operation of the management division. The management division handles the overall management of the hospital by managing the outsourced services delivered by a third-party main contractor (refer to Figure 7.2). The third party contractor manages the respective service providers from SME companies with good track records and experience in FM services with regard to the healthcare sector.

(b) Case 2- Case Healthcare (CH2)

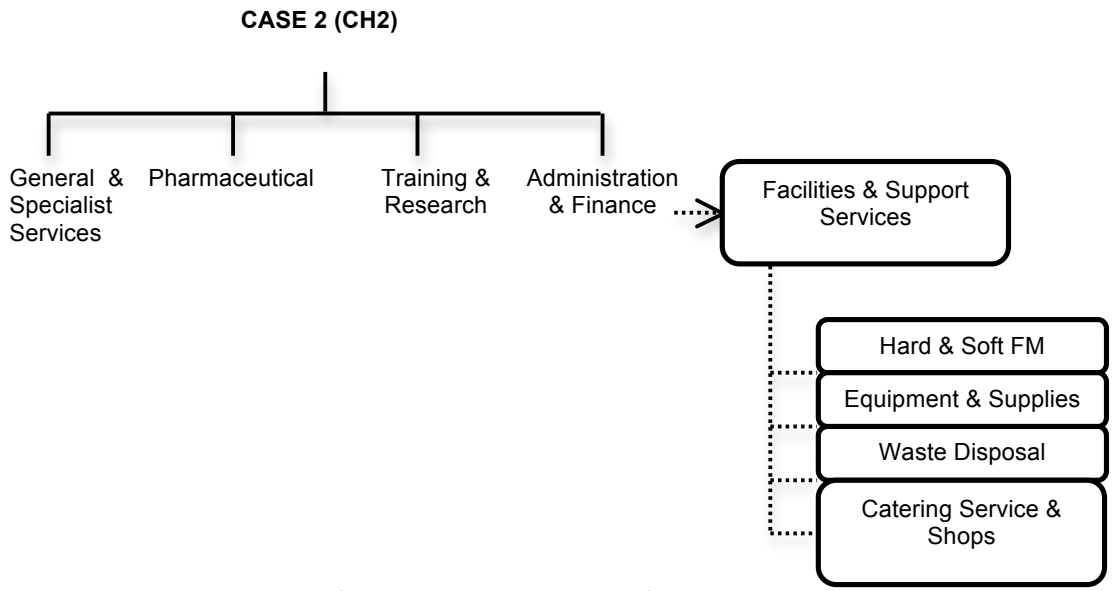


Figure 7.3: The position of the FM department in CH2

CH2 is a government tertiary referral hospital in Kuala Lumpur and was first developed in 1870. It has 83 wards, which can accommodate around 2300 patients at one time. The total number of staff working at the hospital is 7000, from various fields and disciplines. Two major refurbishment works were completed in 1988 and 1997 to uplift the building conditions and provide additional hospital amenities. The overall organisational management of the hospital is comprised of four main divisions: general and specialist services, pharmaceutical, training and research, and administration and finance (refer to Figure 7.3). Administration and finance is the division that handles the management of facilities and support services. This includes the hard and soft FM, equipment and supplies, waste disposal, and catering service and shops. An outsourced hospital FM contractor manages the facilities and support services department.

(c) Case 3- Case Retail (CR1)

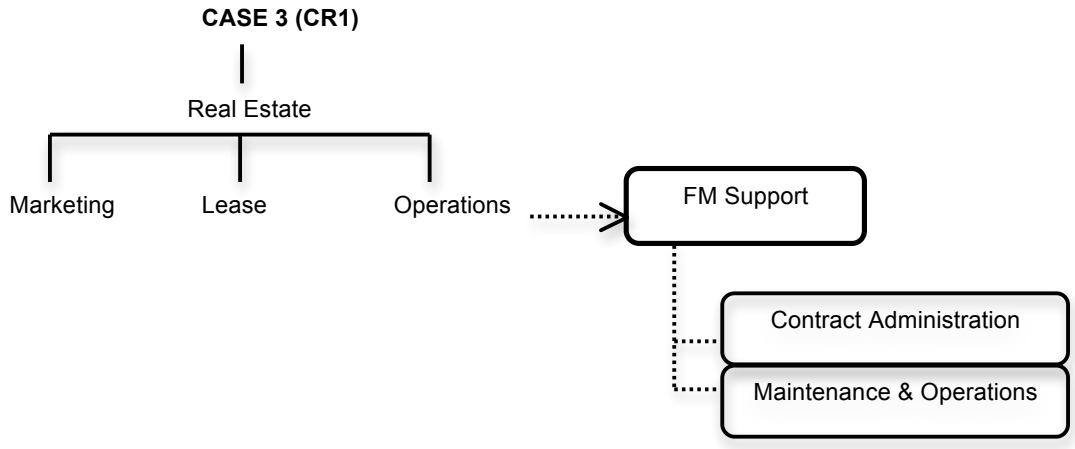


Figure 7.4: The position of the FM department in CR1

CR1 is one of Malaysia's famous landmarks and has a large spread of three-storey floors of retail area. This large complex has 60 high-end retail outlets under its roof and some public amenities such as a prayer room, food court and exhibition rooms. It is managed by the client sub-company, which focuses only on the real estate department. The real estate company handles the marketing, operations and lease services, as shown in Figure 7.4. The FM service has a dedicated department named FM Support, which is put under the operations division. The in-house FM team is responsible for monitoring the service performance delivered by the outsourced service providers and ensuring that all relevant requirements and standards are adhered to. The outsourcing started when the building was first operated in 1990. The FM Support department is also in charge of two main areas, which are contract administration, and maintenance & operations. The in-house FM employees from the contract administration division are responsible for handling the management works such as procurement, contractual arrangement, statutory and compliance matters, as well as payment matters; while the in-house FM employees from maintenance & operations oversee the conduct of operations, monitoring of contractors and any service matters which occur.

(d) Case 4- Case Retail (CR2)

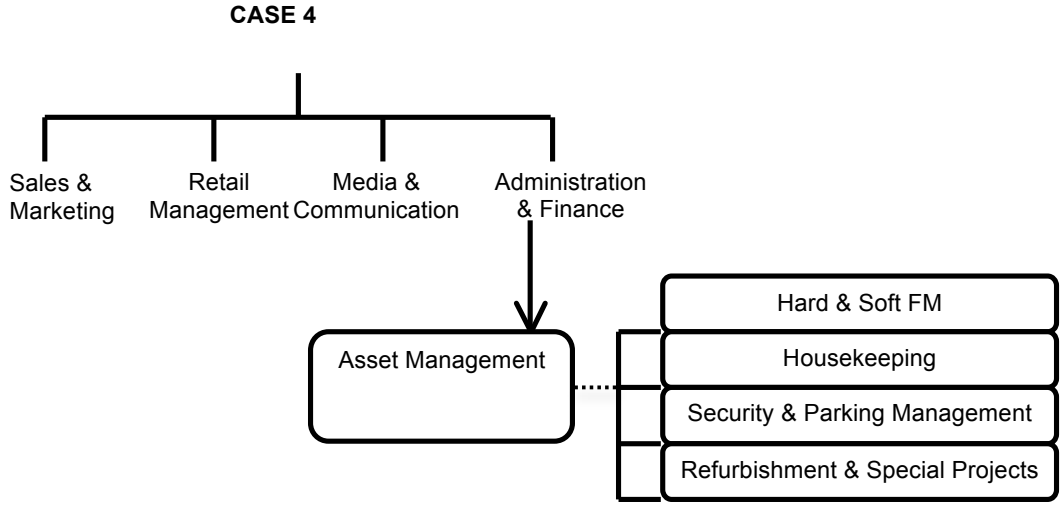


Figure 7.5: The position of FM services in CR2

CR2 is a large four-storey retail complex situated in North Kuala Lumpur. It was opened in 2002 and houses 67 retail shops, a food court, prayer room, public washrooms, and children's play area, as well as function halls for the public. This shopping complex was among the first buildings to be built when 10 acres of land was first developed in 2000. The company's organisational structure is focused on four main divisions: sales & marketing, retail management, media & communication and also administration & finance (refer to Figure 7.5). The administration and finance division's role is to manage the asset management of the building, among other duties. The asset management of the shopping complex is outsourced to an established main service contractor. The outsourced contractor is responsible for managing both hard and soft FM, housekeeping work, security and parking management, and also refurbishment and special projects.

(e) Case 5- Case Finance (CF1)

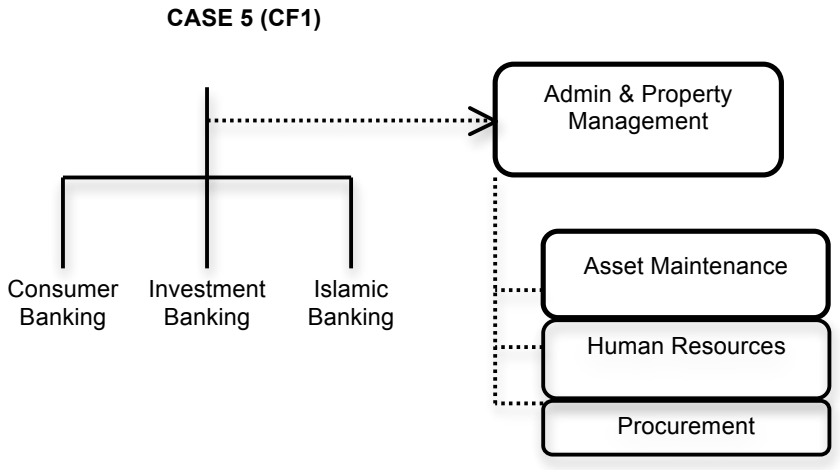


Figure 7.6: The position of FM services in CF1

CF1 is a 6-storey building of a leading international finance institution in Malaysia. The company has a total of 35 bank branches all over Malaysia and has distributed its business in other parts of Asia. The core services of CF1 include consumer banking, investment banking and Islamic banking. The whole management structure of the financial institution has a dedicated division to oversee the management of its properties, that is, the admin and property management (refer to Figure 7.6). This division handles the management of asset maintenance, and human resources as well as procurement. An outsourced main contractor at all of CF1's bank branches manages asset maintenance.

(f) Case 6- Finance (CF2)

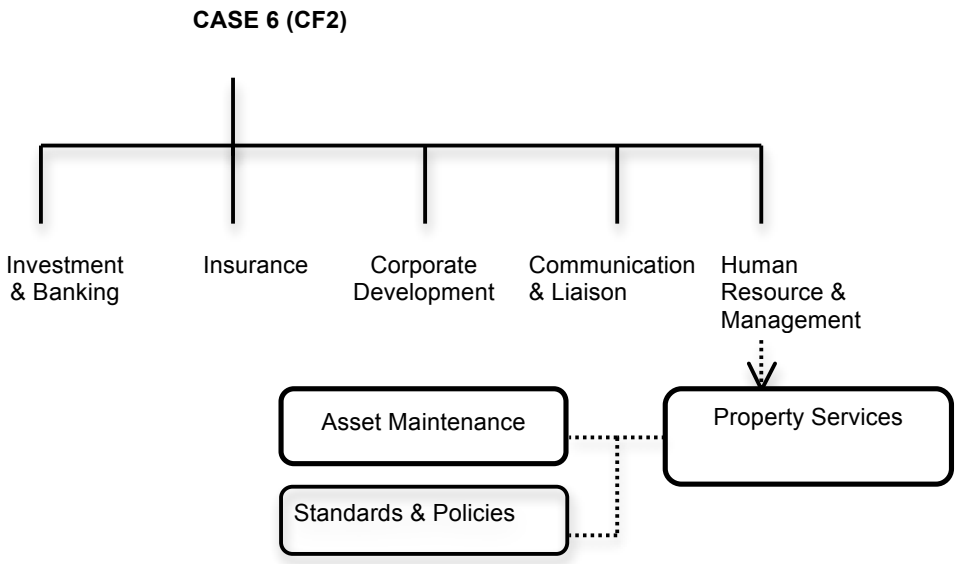


Figure 7.7: The position of FM services in CF2

CF2 is the second main headquarters for the finance and insurance consultancy. CF2 started its operation at the building in 1986. The building is a high-rise office building with 9 storeys dedicated to office work and a customer centre. It houses approximately 400 office workers and serves an average of 500 customers daily. The FM services have been outsourced since 2005 and managed by the third-party property agent. The organisation's main service divisions are investment & banking, insurance, corporate development, communication & liaison and also human resource & management. Human resource & management has a special department, which is property services, to manage the asset maintenance and the compliance and regulations of both standards and policies pertaining to property and asset management (refer to Figure 7.7).

(g) Case 7- Case Office Building (CO1)

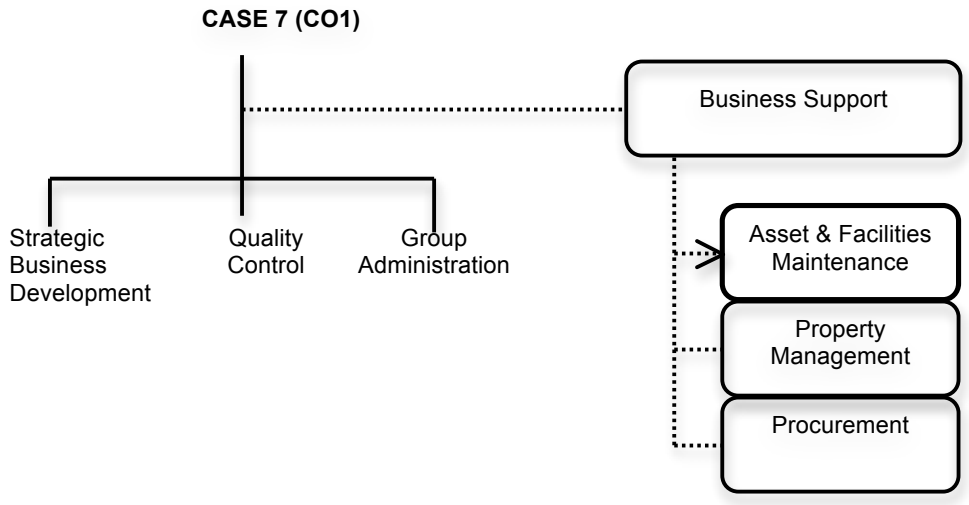


Figure 7.8: The position of FM services in CO1

CO1 is a multi-storey office building with the capacity to accommodate 1200 staff. There are three main divisions in the organisational structure, namely strategic business development, quality control and group administration. There is a specific division named business support, which is linked to the three divisions (refer to Figure 7.8). The business support division is seen as having a managing role to support the whole organisation's business process. In this division, there are three key departments, namely asset & facilities maintenance, property management and procurement. Asset & facilities maintenance is managed by the in-house staff who are responsible for managing the service delivered by a group of service providers. The property management department focuses on the overall strategic management of CO1 and other properties owned by the company, which includes the statutory standards compliance. Procurement is the department that manages the contract management of the service providers of all properties' outsourced contractors. The operation of CO1 was outsourced to the main contractor in 2004. The third-party main contractor works together with the FM team on site to oversee the operation by the contracted service providers.

(h) Case 8- Office Building (CO2)

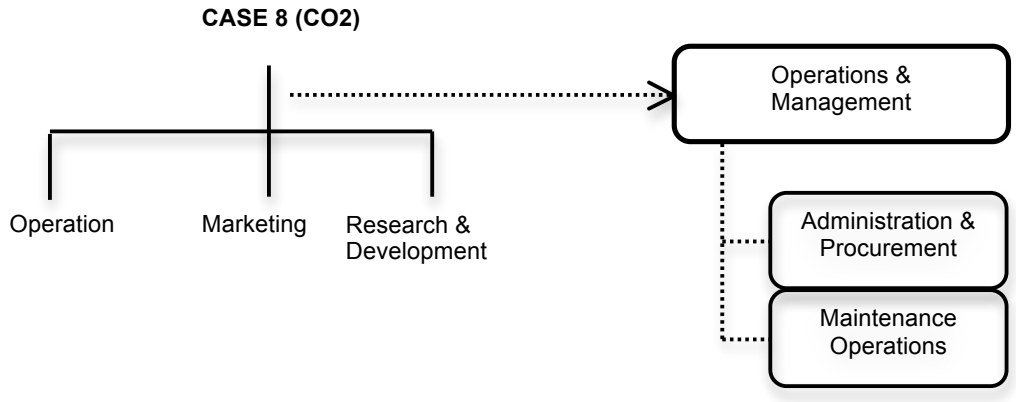


Figure 7.9: The position of FM services in CO2

CO2 is a high-rise 15-storey office building located in Selangor. It was first built in 1997 and the current occupancy number is 1587 staff. The company structure is comprised of three core divisions, namely operation, marketing, and research & development. Operations & Management is a dedicated division that functions as a business-supporting role for CO2 (refer to Figure 7.9). It operates by handling two departments: administration & procurement and maintenance operations. Maintenance operations in particular is the department that manages all the technical aspects of the daily building operations on site, whereas administration & procurement focuses on the management and procurement aspects, including controlling the quality standard for the service delivered by the contractors. All these departments are managed by the in-house staff of the company, except for the FM services or maintenance operations, which are delivered by the outsourced service providers.

7.2.2 UK Case Studies

(a) Case 1- Healthcare (CH3)

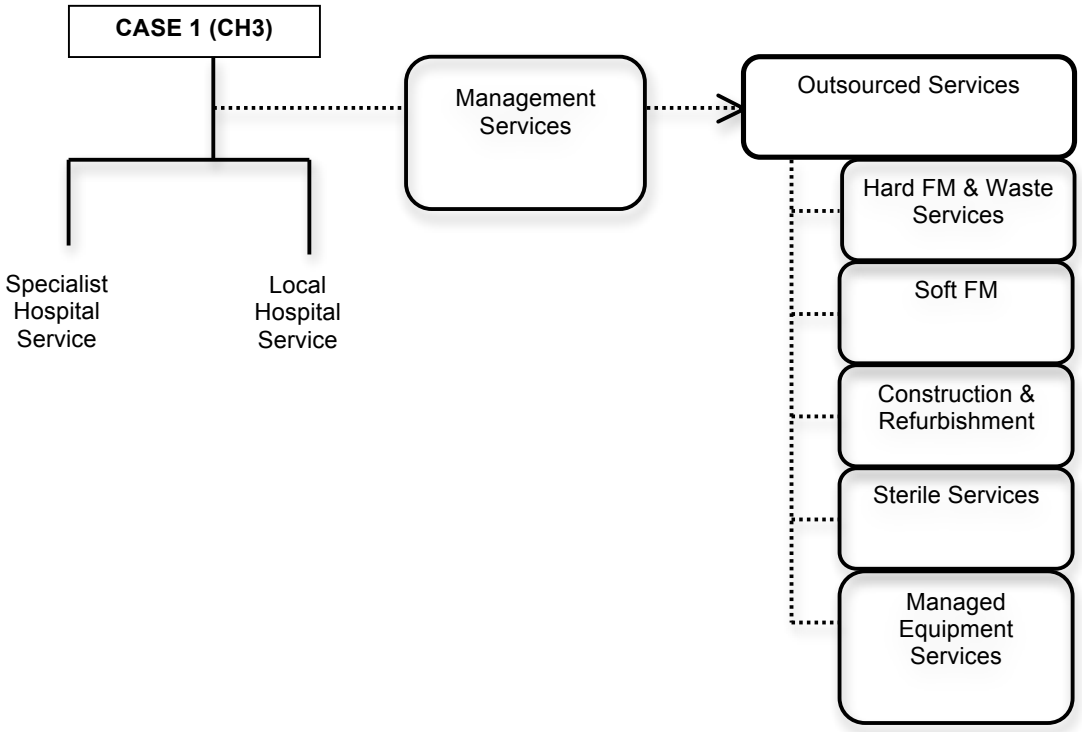


Figure 7.10: The position of FM services in CH3

CH3 is one of the leading healthcare specialist and local hospitals in the UK. It is one of the oldest hospitals, founded in 1123, but has undergone phases of redevelopment and conservation projects throughout its operational years. The latest redevelopment work is anticipated to be completed by 2016. There is also an ongoing restoration plan incorporating both historic design and new dimension of facilities to cater for the patients, visitors and staff. The management services focus on the hospital support services, which are outsourced to an FM company (refer to Figure 7.10). The outsourced services include hard FM & waste management, soft FM, construction & refurbishment, sterile services and managed equipment services.

(b) Case 2- Healthcare (CH4)

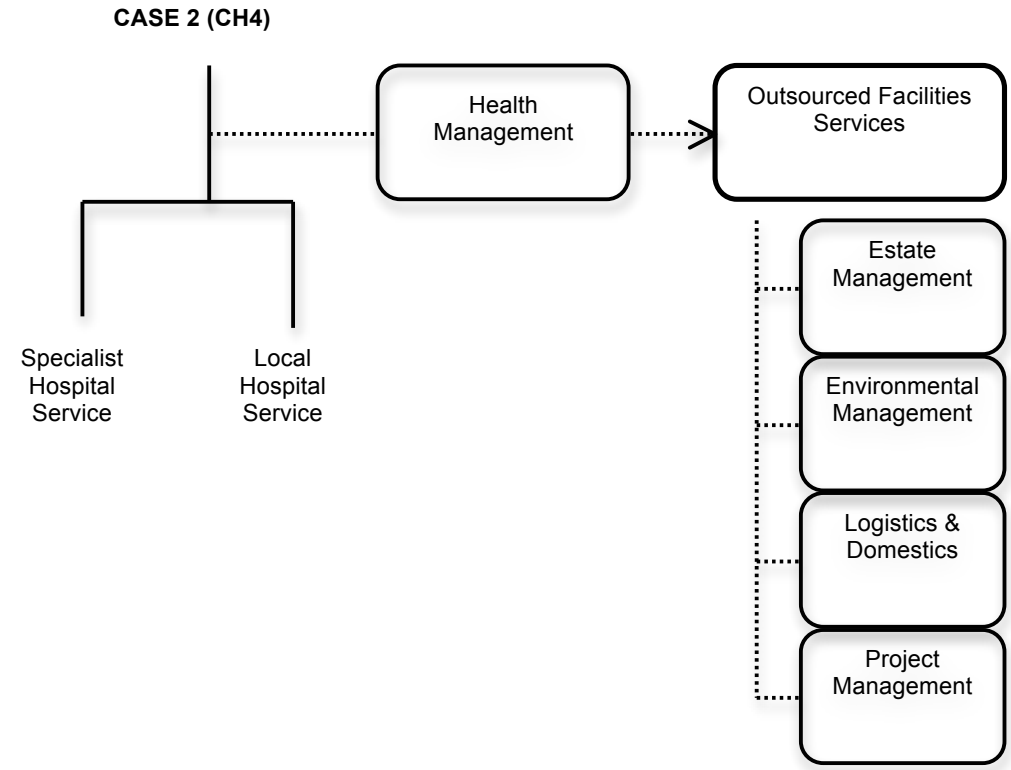


Figure 7.11: The position of FM services in CH4

CH4 is located in central London and was opened in 2005. The total built-up area is 75,822 sq meters and it has beds for approximately 700 patients. The main role and service of the hospital is divided into two, which is to provide specialist hospital service and local hospital service. The Health Management team is responsible from the inception phase - design and build - and for the daily operation of the hospital. The selected outsourced company is appointed to provide the ongoing facilities services. It also delivers a wide range of services designed to create a better patient environment throughout the hospital. FM services provided range from estate management, environmental management, logistics & domestic, as well as project management (refer to Figure 7.11).

(c) Case 3- Retail (CR3)

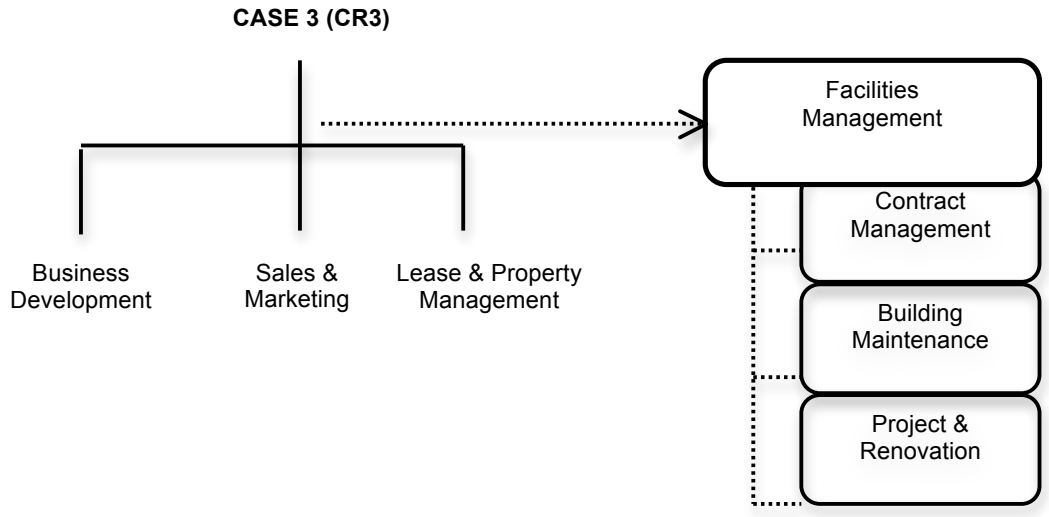


Figure 7.12: The position of FM services in CR3

CR3 is a luxury shopping centre located in the city centre of Liverpool. It was renovated into a 160,000 sq feet retail and leisure centre in 2006. This shopping centre has a total of 40 retail stores under its roof. The structure of the retail company is comprised of three main divisions, which are business development, sales & marketing and lease & property management (refer to Figure 7.12). Facilities Management is a separate division that supports the overall business operation and is also linked to the core three divisions of the company. The in-house FM department manages the overall FM services by overseeing a group of service providers at CR3. FM services provided are divided into three main areas: contract management, building maintenance and project & renovation. Contract management focuses on the management of the appointed contractors including the agreed job specification and monthly payment. Building maintenance operates both hard and soft FM on site, whereas project and renovation focuses on any refurbishment or special projects which require relocation of properties, and also coordination of works.

(d) Case 4- Retail (CR4)

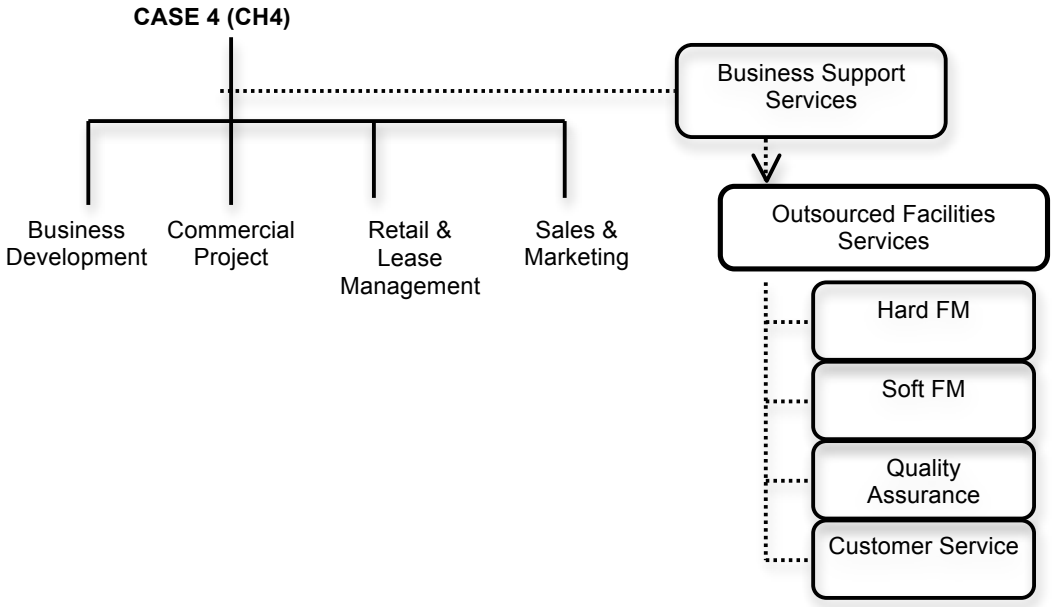


Figure 7.13: The position of FM services in CR4

CR4 was a part of a retail-led development - a major redevelopment project of 42 acres of land. It houses 140 retail shops and is known as one of the five top shopping centres in the UK. It is also a new model for retail development and a prime location for a marketing campaign within a city centre area. The company has four main departments: business development, commercial project, retail & lease management and sales & marketing (refer to Figure 7.13). Its FM service is positioned under the business support services and is outsourced to a third-party FM company. The outsourced company's role is to manage both hard and soft FM, and also to manage the important elements in service delivery, namely quality assurance and customer service

(e) Case 5- Finance (CF3)

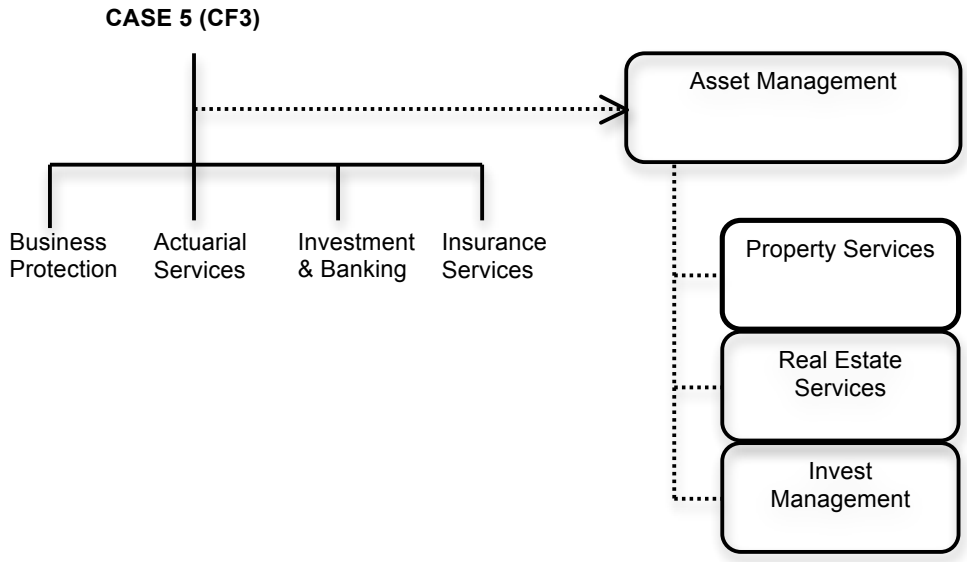


Figure 7.14: The position of FM services in CF3

CF3 is one of the largest banking companies in the UK, which also provides other financial consultancy and services, namely business protection, actuarial services, investment & banking and also insurance services. There is a dedicated division - asset management, responsible for managing the property services - which focuses on the FM services at its properties, real estate services and also investment management (refer to Figure 7.14). Property services' roles are to oversee the performance of service delivered to the clients and end users with the aim of achieving the best practice standards. The service providers are the outsourced main contractors that are established in their respective services.

(f) Case 6- Finance (CF4)

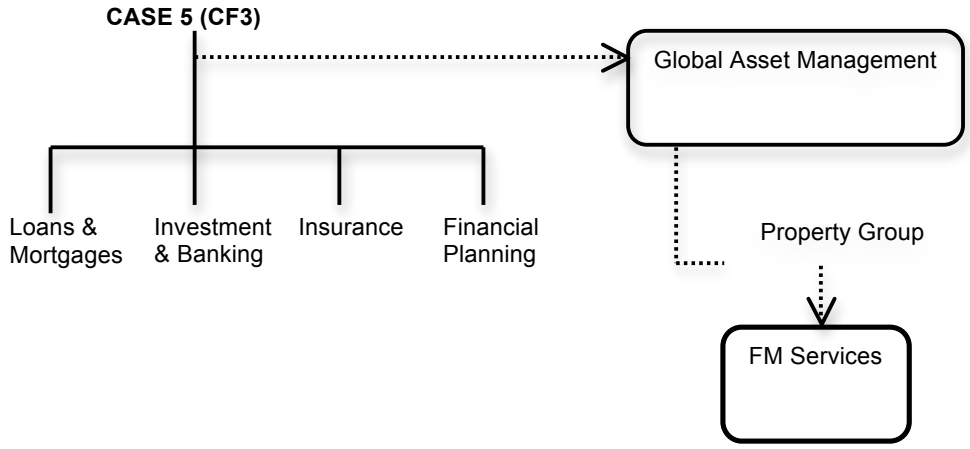


Figure 7.15: The position of FM services at CF4

CF4 is one renowned international bank with around 1800 operating sites in the UK. Their financial service caters for personal, commercial and private organisations and the services range from loans & mortgages, investment & banking, insurance and financial planning (refer to Figure 7.15). Global asset management is a division that handles the property group that focuses on the outsourced FM services to all its operating sites. The general services provided are mechanical and electrical services, fabric maintenance, cleaning and waste management, and energy management. The property group's service aim is driven by the commitment to deliver a best practice service, contributing both to the business values and end users' benefits.

(g) Case 7-Office Building (CO3)

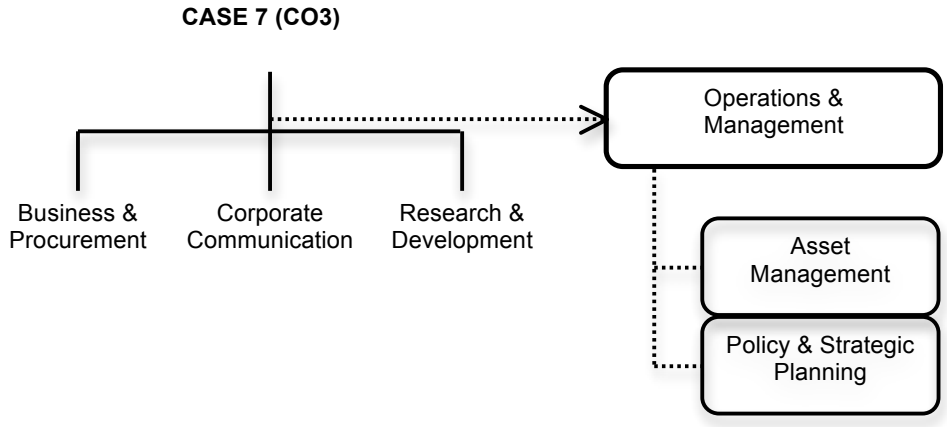


Figure 7.16: The position of FM services in CO3

CO3 is an office building located in London and comprises 3 connected office blocks. The main building was first operated nearly fifty years ago and is still being used as the main office building. Refurbishment works were completed some years ago and this has increased the occupancy level to 3000 staff. Substantial efforts were taken to ensure that the original façade and building elements were preserved and are also energy efficient. There are three main divisions of the office building's nature of service: business & procurement, corporate communication and research development (refer to Figure 7.16). Operations & management is a separate division which functions as the business support role. It oversees two departments: asset management and policy & strategic planning. Asset management handles the management of both hard and soft FM as well as other office support services, namely printing, portering and others. Policy and strategic planning focuses on the planning of standard practice and the implementation works. FM services are managed under asset management but the relevant standards and regulations related to the operation services are monitored under policy and strategic planning.

(h) Case 8-Office Building (CO4)

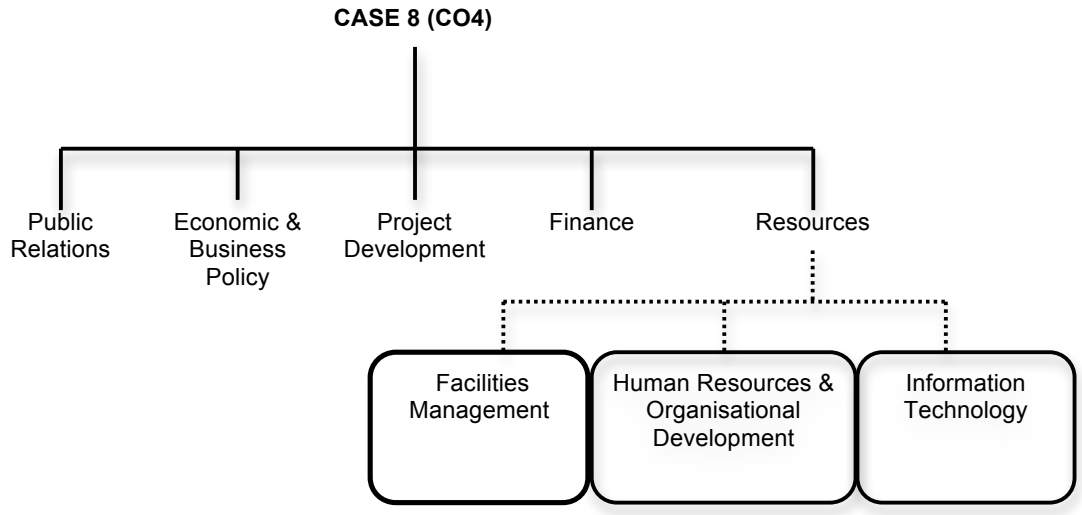


Figure 7.17: The position of FM services in CO4

CO4 is a multi-storey office building situated in South London. It is occupied by approximately 2500 staff. The modern design of the building reflects the corporate image of the company. It provides office facilities and public spaces like a café, washrooms and waiting lounge to accommodate both staff and visitors' needs. The company has five main divisions: public relations, economic & business policy, project development, finance and resources, as shown in Figure 7.17. The resources department is responsible for managing the company resources, particularly in the management of facilities, human resources and organisational development as well as information technology. The in-house staff are responsible for monitoring and overseeing the performance of the service delivered by the outsourced service contractors.

7.3 The Scope of FM Services

The scope of FM services offered by the case studies is assessed according to two categories of FM, which are hard FM, and soft FM, as shown in Figure 7.18.

Hard FM	Building Services, Specialist System, Asset Management, General Maintenance, Building Fabrics & Asset, Energy Management
Soft FM	Waste Management, Pest Control, Grounds Maintenance/ Landscaping, Internal Planting & Decorations, Cleaning, Security, Space Planning, Parking Management, Traffic Control, Management Information, Helpdesk, Portering, Mail, Printing, Catering

Figure 7.18: The scope of services for hard and soft FM

The analysis of the provision of hard FM services indicates that all case studies implemented the majority of the services with some exceptions in energy management services. 19% of the case studies do not implement energy management. This was presented by two finance organisations (CF1, CF2) and one office building (CO1) from Malaysia. According to these organisations, although they monitor the energy supplies to the buildings, there is no managing work conducted to manage the usage. The scopes of work were to maintain the smooth electrical supply but no planning or rectification works were taken to ensure that the buildings are energy controlled and efficient. As for the other 13 organisations, the standard requirements and practice workflows have been outlined for the energy management, which they just need to implement in practice.

As for soft FM, there are seven FM services that were not practised by some of the case study organisations, namely waste management, space planning, parking management, traffic control, portering, printing and catering. Waste management was provided in the FM service scopes of all 13 case studies, except three organisations in Malaysia: one finance institution (CF2) and both office buildings (CO1 and CO2). The organisations have a similar practice regarding waste where they only hire contractors to collect the waste according to schedule. No focus or initiatives were given on the collection, disposal and recycling processes involved. There was also no segregation of waste being implemented on site prior to collection by the contractor.

Both of the office buildings in Malaysia (CO1 and CO2) claimed that, although they understand that space planning is one of the FM service scopes, they had never given any focus to this service element. Although space planning is something very imperative in office buildings' management, they had never been involved in any space planning or arrangement when any relocation or refurbishment work took place. The higher management would normally hire a consultant and designer to work on the new planning design for the works, and an FM contractor was only instructed to oversee the relocation and movement of properties during the process.

As for both parking management and traffic control, all the case study organisations claimed to have scope for these services in their FM services. The only organisation that does not offer this service is CR3 in the UK. This is because there is no parking facility provided at the case study building. The rest of the case study organisations stated that their management of parking and also traffic control includes the issuance and payment of parking tickets, and maintenance and surveillance of parking areas, as well as the traffic control for the access and exits of the parking space, lobby and waiting areas.

The other scope of FM services that was not being implemented by several case study organisations is portering. Both retail organisations in Malaysia and one in the UK (CR1, CR2, and CR3) and also one financial institution in Malaysia (CF1) claimed that they do not offer portering services.

7.4 The Elements of Performance Measures

An analysis was made of the elements of the performance measures being used by all the case study organisations according to the respective category and region. The aggregative levels of performance measures can range from performance parameters, metrics, indicators and attributes. The aggregative levels show the heading or grouping of the performance measures as well as how detailed they are being designed by the participating case study organisations. The study aims to understand the various approaches implemented for the imperative elements of performance measures. The term of measurement here refers to the total approach taken for the measurement designs of respective organisations, which include the performance measures and whether any other related performance elements namely performance formula or targets and monitoring methods. This includes whether the purposes of the measurement process are fully communicated among the higher management level and FM team members and also, what are the core principles of the PM approach. The design and methods chosen to formulate the whole measurement approach including the performance measures were also considered, to reflect whether the organisation's mission and strategies were also emphasised therein. The types of performance measures, namely subjective or objective, and the balance of the emphasis given to the management and operation scope of FM services were also covered. Another element that was given attention was the implementation of the performance measures - whether they are easy or complicated to implement, and also whether both management and operation scopes are implemented concurrently. Quality assessment signifies the steps taken to assess the quality level of both service performance and the performance measures themselves. They could be any exercise of a consistent audit or benchmarking of the performance measures or dimensions or other means of assessment, namely client satisfaction survey. The last element is report, which refers to how the compliance of each PM indicator is reported, and the frequency of each report being exercised by the service providers to the FM team or by the FM team to the higher management. These elements are the core fundamentals that were suggested in the literature to lead to a clear and better understanding of the PM indicators used by the selected organisations. Further analysis of what is being represented by each category - healthcare, retail, finance and office building from Malaysia and the UK respectively - is presented in the next part of the analysis.

7.4.1 Healthcare Organisations

A comparison is made between healthcare organisations in Malaysia (CH1 and CH2) and the UK (CH3 and CH4), as shown in Figure 7.19. Both cases claimed that their staff understood their measurement purposes. Generally, their purpose is to understand their performance level in providing the best hospital care to the patients and building users. The purpose also reflects the organisation's process and mission. When asked what is their principle of measurement, the healthcare organisations in Malaysia claimed that theirs is to improve their service delivery and ensure that the agreed service level is delivered; whereas the UK organisations stated that their focus was on improvement and to provide precise information of their service level. They also intended to stimulate continuous improvement rather than just simply monitor their service performance. They also made sure that the performance measures represent a balanced view of the service system and that the cause and effect relationship between the performance measures and results are established. As for the formulation of PM indicators, CH1 and CH2 from Malaysia claimed that their performance measures were formulated and proposed by their consultants to cater the FM services for hospitals. The performance measures were designed to meet the expectations of both the board directors and patients.

On the contrary, the performance measures for both CH3 and CH4 in the UK were derived from a mutual consensus arising from a discussion among the trust boards, professional practitioners and also the FM department. The sets of performance measures were formulated by considering both patients' and building users' points of view. They were also geared to achieve a balanced and cost-efficient operation with achievable targets. Although all organisations adopted both financial and non-financial measurements, their types of performance measures are different. Malaysian healthcare organisations use subjective performance measures to measure the management services, but set brief performance measures for operation services, where more detailed specifications must be referred to the contractors' Service Level Agreements (SLAs).

Therefore, more focus is given to measure the management performance measures as opposed to the technical requirements for operation services. On the contrary, the UK healthcare organisations provide a set of subjective and objective performance measures for both management and operation services that service

contractors need to achieve. The indicators are outlined based on the service processes involved for each service and they also define unit of analysis and performance tolerance. This has resulted in more consistency of the management service indicators being implemented by CH1 and CH2, in comparison to the operation performance measures that had to be referred to SLAs. This also shows that the performance measures for both the healthcare organisations in Malaysia are separated and the specifications for technical operations were not given much emphasis. The performance measures for the UK healthcare organisations appear to be more comprehensive and easy to be measured and the data were automatically collected from the completed service processes. All organisations also claimed that external audits were conducted to compare their performance measures with other healthcare organisations within the regions. Similarly, their reporting methods were linked to the appraisal report and penalty scheme and regulated on a monthly basis.

ELEMENTS	MALAYSIA (CH1, CH2)	UK (CH3, CH4)
Purposes	• Purposes were generally understood by members of team and reflected the organisation mission	• Purpose of measurement were understood and reflected the organisation's strategies
Principles	• Aimed to improve the service delivery • Agreed service level was delivered	• Focused on improvement and provided precise information • Stimulated continuous improvement rather than simply monitoring • Cause and effect relationship between the measurements and results • Balanced view of the service system
Formulation of measurement	• Measurements were proposed by a consultant to cater to the FM services and the nature of healthcare service • Designed to ensure that all services are carried out as per board of directors and patients' expectations	• The measurements were derived from a discussion between the board of trust, professional practitioners and also FM department taking into account the patients and building users' points of view • Geared towards achieving a balanced and cost-efficient operation with achievable targets
Measurements	• Subjective performance measures for the management service measurement • Measurements were more detailed for the management aspect in order to measure the service provider's performance • Operation service specific performance measures and unit of analysis brief - more details to refer to SLA • Both financial and non-financial performance measures are adopted	• Combination of both objective and subjective performance measures • Performance measures were explicitly defined complete with the standard unit of analysis and performance tolerance • Performance measures were outlined based on the processes involved for respective service and complied with the relevant guidelines • Adoption of both financial and non-financial performance measures
Implementation	• The measuring process by FM team can be completed on the management indicators only, whereas the operation indicators have to refer to the service provider's SLA and daily checklist	• Comprehensive and easy to be measured as the unit of analysis and performance attributes are clearly defined and set • Use the data that are automatically collected from the service process
Quality Assessment	• Comparisons were made with other hospitals through audit by consultant (once a year)	• Comparison of the organisations in the same business
Report	• The reporting of measurements' conformance was linked with the appraisal report and penalty scheme • Regular reporting (once a month)	• The reporting of measurements' conformance was linked with the appraisal report and penalty scheme • Regular reporting (once a month)

Figure 7.19: The PM elements by the healthcare organisations

7.4.2 Retail Organisations

The Malaysian retail organisations (CR1 and CR2) claimed that their measuring purposes were well understood by the stakeholders and FM staff (refer to Figure 7.20). Similarly, the UK retail organisations (CR3 and CR4) also claimed that their measurement purposes were well understood and linked with the organisation's mission and vision. CR1 and CR2's principles were aimed to meet the customers' expectations and enable the evaluation of service providers' performance. Similarly, CR3 and CR4'S principles were more to achieve improvements and quality enhancement, and to achieve the required service standard. The approaches taken by the UK and Malaysian retail organisations in formulating the measurement are quite similar. CR1 and CR2 signified that their performance measures were designed to meet the daily capacity and service providers' scope of work and were formulated by the FM team and approved by the stakeholders or clients. CR3 and CR4 also formulated their performance measures based on the consensus among the stakeholders and managerial level. The performance measures were designed with emphasis given to the customers' prioritised elements. Clearly, CR3 and CR4 were able to highlight the core elements in meeting the customers' satisfaction. CR1 and CR2's selection of performance measures were on subjective and non-financial performance measures, and this only applied to the management service aspect. Operation service performance measures were not compiled together with the management performance measures, as they were mainly listed briefly in the daily checklist and can be further referred to the SLAs. CR3 and CR4 had a different approach, where they adopted both financial and non-financial performance measures and subjective and objective performance measures. This also signifies that the performance measures were paired with the relevant units of analysis and also monitoring methods. They also claimed that their sets of performance measures were easy to monitor and provided fast and accurate feedback. UK retail organisations believed that having a structured set of performance measures and attributes with measurable units of analysis had enabled them to be more knowledgeable and also flexible to any changes. CR1 and CR2 also depended on the tenants' satisfaction survey to assess their service and to improvise on the selection of PM indicators. CR3 and CR4 seemed to have taken more initiatives, which were by conducting surveys to both tenants and customers and had also undertaken continuous assessment of the facilities' improvement. Although all the organisations' measurement compliances were connected to the penalty schemes,

they were linked to the monthly report of CR1 and CR2, and both monthly and appraisal reports of CR3 and CR4 on a monthly basis.

ELEMENTS	MALAYSIA (CR1, CR2)	UK (CR3, CR4)
Purposes	• Measuring purposes were understood by stakeholders and FM staff	• The purposes of measurement were well understood and linked to the organisation's mission and vision including business profit target and enhancement
Principles	• Aimed to meet the customers' expectations and standards on the service delivery • To enable service providers' performance evaluation	• To achieve service standard requirements and quality enhancement • Improvement-oriented • Consistent performance tolerance
Formulation of measurement	• Measurements were formulated by the FM team with approval from stakeholders/clients • Designed to meet the daily capacity and service providers' scope of work	• Measurements were formulated by the consensus among the stakeholders and managerial level • Designed with the emphasis on the elements that customers are shown to prioritise from the survey outcomes
Measurement	• Management performance measures were subjective and the assessment points were point-based • Operations' performance measures depend on daily service checklist and service providers' SLAs • Non-financial performance measures •	• Integration of objective and subjective performance measures • Performance measures were structured and paired with specific indicators and unit of analysis • Monitoring methods were defined for respective measures • Adoption of both financial and non-financial performance measures
Implementation	• Simple and easy to use • Indicators are specified for respective performance measures and more towards making sure daily tasks are completed • Straightforward and provide fast feedback •	• Simple and structured set of performance measures with respective attributes and monitoring methods that are easy to be implemented • Flexible to changes in performance and circumstances • Provide timely and accurate feedback
Quality Assessment	• Tenants' satisfaction survey	• Customer and tenants' satisfaction surveys • Continuous assessment of the facilities' improvement: changing of layout and new refurbishment
Report	• The reporting of measurement conformance was related to the monthly report and non-conformance penalty exercise • Regular reporting (once a month) •	• The reporting of measurement conformance is linked with the monthly reports, appraisal reports and penalty scheme • Regular reporting (once a month)

Figure 7.20: The PM elements by retail organisations

7.4.3 Finance Organisations

All finance organisations claimed that their measurement purposes were clear and linked with the corporate objectives and strategies (refer to Figure 7.21). In addition, UK finance organisations (CF3 and CF4) believed that their purposes were communicated to the corporate level to ensure that the corporate objectives and strategies were achieved. The principles applied by CF1 and CF2 were to deliver an agreed service quality to improve the service performance and customers' satisfaction. Similarly, CF3 and CF4's applied principles were very simple and focused – the objective was to deliver a quality service delivery strategically. They also emphasised a continuous service enhancement. Both groups of finance organisations from Malaysia and the UK had their performance measures formulated by the FM team, and approved by the stakeholders and clients. While CF1 and CF2's sets of measurements were designed to produce routine results, CF3 and CF4 ensured that their measurements incorporated short- and long-term strategic planning objectives and linked strategies, actions and performance measures. The approaches taken by both Malaysian and UK finance organisations in structuring the PM indicators are different. CF1 and CF2 had only subjective and non-financial performance measures for management and operation services. The performance measures for operation services were simple and more details have to be referred to the contractors' SLAs. Meanwhile, CF3 and CF4 incorporated both objective and subjective performance measures, and financial and non-financial performance measures. Performance tolerance and formula were also specified therein. CF1 and CF2 implemented the performance monitoring process when finalising the monthly report and non-conformance fines for the monthly payments, and not as a scheduled monitoring process. CF3 and CF4 believed that their sets of performance measures are easy to implement and monitor, in which they also produced timely and accurate feedback that led to accurate results. Both the UK finance organisations also ensured that their sets of performance measures were flexible to any circumstance changes. As for the quality assessment, CF1 and CF2 mainly depend on any complaint report feedback. On the other hand, CF3 and CF4 had taken imperative actions where, apart from customer satisfaction surveys and complaint assessments, they also conducted an external benchmarking with other finance organisations once every three to five years. The four finance organisations' reporting methods were quite similar: monthly reporting and as part of the monthly service report. However, the UK finance organisations also required the service contractors to provide major non-compliance reports as and when needed.

Elements	MALAYSIA (CF1, CF2)	UK (CF3, CF4)
Purposes	• Measuring purposes were clear and linked with the corporate objectives and missions	• The purpose of measurement was communicated to the corporate level and linked to the corporate objectives and strategies
Principles	• Aimed to deliver an agreed level of service standard to client and customer • Aimed to improve service performance and customers' satisfaction	• Simple and focused objective: deliver quality service strategically • Emphasis on a continuous service enhancement
Formulation of measurement	• Measurements were formulated by the FM team with approval from stakeholders and clients • The performance measures were designed to produce routine results	• Measurements were formulated by the FM department from discussions with stakeholders and clients • There is a link between strategies, actions and performance measures • Incorporated both short- and long-term strategic planning objectives
Measurement	• Subjective performance measures • Operation measures were a simple set of indicators, more specifications in the SLAs • Non-financial performance measures	• Incorporation of both objective and subjective performance measures • Performance tolerance and formula were specified for respective measurements • Both financial and non-financial performance measures were implemented
Implementation	• Very straightforward • Mostly being implemented when deciding on any non-conformance points for monthly payment	• Structured framework that is straightforward and easy to implement and monitor • Consideration of the applicability of the framework for certain circumstances is given • Provided timely and accurate feedback. Data can be processed for accurate results
Quality Assessment	• Complaint Report	• Benchmarking with other PM designs used by similar organisations in once every 3-5 years • End users' satisfaction surveys and complaint assessment
Report	• Regular reporting (once a month) • Reporting as part of the monthly service summary report	• Major non-compliance reports (as and when needed) • Regular reporting (once a month) • Reporting as part of the monthly service summary report

Figure 7.21: The PM elements by finance organisations

7.4.4 Office Buildings' Organisations

Both Malaysian (CO1 and CO2) and UK (CO3 and CO4) office buildings' organisations claimed that their purposes of measurements were communicated to the corporate levels (refer to Figure 7.22). However, CO1 and CO2's sets of PM indicators focused on the service contractors' services and did not encompass any corporate enhancement elements. Meanwhile, CO3 and CO4 claimed that their sets of performance measures were driven from the corporate objectives and strategies. The principles used by CO1 and CO2 were simple and brief - to ease the monitoring process of service providers' performance and customers' satisfaction. A strategic principle was adopted by CO3 and CO4, where they aimed for strategic service delivery. All performance measures and attributes were clearly defined to all the parties involved. The formulation of measurements by all the organisations was different. CO1 and CO2 adopted subjective and non-financial measurements with only short-term objectives to produce routine results. Both management and operation measurements were based on simple guidelines designed by the FM team and approved by the stakeholders, clients and service providers. CO3 and CO4's responsible party to formulate the measurements was also the FM team, with approval from the stakeholders and clients. They adopted subjective, objective, financial and non-financial performance measures to achieve both short- and long-term strategic planning objectives. This is also to link strategies, actions and measurements. They also specified performance formula, calculation, and performance tolerance for the performance measures. The performance evaluation process conducted by both CO1 and CO2 was very simple and straightforward, where the data were processed from service checklists and reviewed during the non-conformance assessment for monthly payments. On the contrary, CO3 and CO4's set of performance measures were used for continuous evaluation and produced accurate results. The Malaysian organisations relied on the audits by the clients' quality control department to assess the FM team quality service, and also service providers' audit results to better understand the FM service deliveries. Meanwhile, the UK organisations used internal and external benchmarking exercises to evaluate their performance measures in comparison to other departments and organisations. They also used the helpdesk feedback and end users' and employee satisfaction survey results to improve their PM. CO1 and CO2 used the monthly performance report to clarify the non-conformance penalties by the service providers. CO3 and CO4 also adopted the same reporting method with the addition of a performance audit report to the corporate level on a monthly basis.

Elements	MALAYSIA (CO1, CO2)	UK (CO3, CO4)
Purposes	• The reasons to measure the performance have been discussed with the corporate level • Performance measures were designed to focus on the service delivery aspect of the contractors and not to encompass any corporate enhancement element	• The measurement purposes were communicated with the corporate levels • The performance measures were driven from the corporate objectives and strategies
Principles	• Simple and brief • The performance measures were used to ease the monitoring of service provider's performance and customer's satisfaction	• Simple and objective oriented: aimed for strategic service delivery and continuous enhancement • All indicators and attributes were clearly defined to all parties involved
Formulation of measurement	• The measurements were formulated to produce routine results • Performance measures were formulated by the FM team with approval from stakeholders/clients • All performance measures incorporated the short-term objectives only	• Method of measurements were formulated by the FM department and discussed with the corporate level and service provider • The methods of calculating each performance measures were clearly defined • There is a link between strategies, actions and performance measures • Incorporated short- and long-term strategic planning objectives
Measurement	• Subjective and non-financial performance measures are used • Management and operations' measurements were based on a simple set of indicators and work guidelines agreed by the contractors	• Integrate both objective and subjective measurements using financial and non-financial performance measures • Performance tolerance and formula were specified for respective performance measures
Implementation	• Simple and straightforward • Used data that were processed from the daily or weekly checklist • Monthly performance evaluation particularly when deciding on non-conformance penalties	• Performance measures were structured in the framework for continuous monitoring and flexibility to changes • Provided data than can be processed for accurate results
Quality Assessment	• Headquarters audit • Service contractor audit	• External and internal benchmarking are carried out to ascertain both business and building values • End users'/employee satisfaction survey • Helpdesk analysis on any major report filed by end users
Report	• Monthly performance report for clarification of the non-conformance penalties	• Performance Audit Report at corporate levels (once a month) • Monthly performance appraisal report

Figure 7.22: The PM elements by office buildings organisations

7.5 PM Structures

All the case studies were also analysed with regard to their PM structures and designs. Several elements were looked into, namely the performance measures aggregative levels and also the overall structure and design. The aggregative levels refer to the extension of performance measures namely performance parameters, metrics, indicators and attributes. The structure focuses on the inclusion of performance formula or targets as well as monitoring methods by the respective case study organisations. The design element looks into the combination of both management and operation service measurements of the overall PM practised.

Figure 7.23 shows the comparison of PM structure for management services adopted by all the 16 case study organisations. In general, it can be seen that the Malaysian healthcare organisations are the only case studies in Malaysia that incorporate the performance metrics, indicators, attributes, performance formula or targets and monitoring methods. Malaysia's retail and office buildings organisations did not specify the performance formula or targets and monitoring methods for their management measurements. Both finance organisations in Malaysia (CF1 and CF2) outlined the performance formula or targets but not the monitoring methods. In contrast, the structures of all healthcare, retail, finance and office buildings organisations in the UK adopted similar comprehensive PM. They designed their PM structure to incorporate all the aggregated elements of measurement: parameters, metrics, indicators, attributes; performance formula or targets and monitoring methods.

As for the operation services, all case study organisations had a simple aggregated level of measurement, that is, metrics and indicators, with some exception by CR2 and CO1, which only had indicators (refer to Figure 7.24). Healthcare organisations in Malaysia had a brief performance formula and targets, where more specifications had to be referred to the SLAs. The retail organisations had no specific measurement for both performance formula and target, unless referred to SLAs as and when needed. Both finance organisations (CF1 and CF2) and one office building organisation (CO1) had no monitoring methods specified in their PM structure. All UK organisations had otherwise shown a contrasting result. Although some of the organisations (CF3 and CR4) had less aggregated measurements, all eight case studies emphasised the performance formula or targets and monitoring methods in their PM structure. In summary, this has indicated that the UK

organisations had a more structured, elaborated and comprehensive PM designs in comparison to Malaysian organisations. The only Malaysian organisations that had a more structured set of management service measurements are the healthcare organisations, where all elements are incorporated. This is anticipated, as the FM service is more progressive in the healthcare sector compared to other sectors in Malaysia.

Sector	***Healthcare***				***Retail***				***Finance***				***Office Buildings***			
Region	*Malaysia*		*UK*		*Malaysia*		*UK*		*Malaysia*		*UK*		*Malaysia*		*UK*	
PM Structure	*CH1*	*CH2*	*CH3*	*CH4*	*CR1*	*CR2*	*CR3*	*CR4*	*CF1*	*CF2*	*CF3*	*CF4*	*CO1*	*CO2*	*CO3*	*CO4*
Management Services																
Performance Measures																
Aggregative Levels																
Parameters			√	√		√	√	√			√	√			√	√
Metrics	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Indicators	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Attributes	√	√	√	√	√	√	√	√			√	√		√	√	√
Performance Formula/Targets	√	√	√	√			√	√	√	√	√	√			√	√
Monitoring Methods	√	√	√	√			√	√			√	√			√	√

Figure 7.23: The PM structure for the management services

Sector	***Healthcare***				***Retail***				***Finance***				***Office Buildings***			
Region	*Malaysia*		*UK*		*Malaysia*		*UK*		*Malaysia*		*UK*		*Malaysia*		*UK*	
PM Structure	*CH1*	*CH2*	*CH3*	*CH4*	*CR1*	*CR2*	*CR3*	*CR4*	*CF1*	*CF2*	*CF3*	*CF4*	*CO1*	*CO2*	*CO3*	*CO4*
Operation Services																
Performance Measures																
Aggregative Levels																
Parameters			√	√			√					√			√	√
Metrics	√	√	√	√	√		√	√	√	√	√	√		√	√	√
Indicators	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Attributes		√	√	√			√	√			√				√	√
Performance Formula/Targets	Brief + Refer SLAs		√	√	Refer SLAs		√	√	√	√	√	√	√	√	√	√
Monitoring Methods			√	√			√	√			√	√		√	√	√

Figure 7.24: The PM structure for the operation services

7.6 Comparison of PM Designs in Malaysia and the UK

A summary of the PM designs adopted by both Malaysian and UK organisations is shown in Figure 7.25.

Characteristics	Malaysian Organisations	UK Organisations
Performance Measurement	• Simple and not objective-oriented • Service-provider driven • Focused more on management aspect	• Strategic and very structured • Customer-driven • Balanced focus on management and operation aspects
Complexity	• Performance measures are too generic	• Performance measures, performance formula or targets and monitoring methods were detailed and specific
Elements of Measurements	• Mostly have metrics and indicators and little emphasis given to performance formula or targets and monitoring methods	• Proposed performance formula or targets and monitoring methods
Classification	• Performance measures for management were categorised accordingly	• Both performance measures for management and operations were categorised accordingly
Scope	• Separated. Focused more on management aspect. • Most case studies relied more on service providers for operations' service delivery standards	• Combined. Outlined both management and operations' service standards • The service providers have to comply with the management and operations' service standards set by FM team

Figure 7.23: Comparison of PM designs in Malaysia and the UK

It can be concluded that the participating Malaysian organisations in this case study have shown that their PM designs were simple and not objective-oriented. This is because the measurement attributes were not elaborated and not matched with performance formula or targets and monitoring methods. This has not allowed them to measure the efficiency level of each service or to provide the means to follow when monitoring them. Their PM design were also service-provider driven as most of them relied on service providers' SLAs for operation service standards instead of formulating their own. This has resulted in the management and operation scopes being separated. Although the management measurements were categorised accordingly, the measurements were too generic, with little emphasis given to performance formula or targets and monitoring methods.

On the contrary, the UK organisations have indicated that their PM designs were structured and strategically designed. They were also customer-driven where, in the formulation of the performance measures, the FM team made sure that they took into account the feedback from the clients and customers. An equal focus was also given to both management and operation service measurements, resulting in having them properly categorised and proposed with an aggregated level of measurements, performance formula or targets and monitoring methods. They also demonstrated that their PM approaches are holistic and the service providers have to conform to the outlined performance level standards set by the FM team.

7.7 Case Studies Data and Findings

The case studies data and findings gathered from the Phase 2 data collection were then used towards developing the PERFM. The findings on the performance measures of the UK organisations in particular, were used along with the literature studies in constructing a set of comprehensive performance measures based on the four aggregative levels- parameters, metrics, indicators and attributes; and together with the respective performance formula or targets. The data from the FM organisations in the UK are the primary data used to develop PERFM. They are believed to be significant as the performance measures used are regularly benchmarked against other competiting organisations.

7.8 Chapter Summary

In overall, the findings of the case studies analysis have signified the significant differences of the FM practice and PM approaches in FM practice between the FM organisations and in the UK and Malaysia. The progresses shown by the FM industry of both regions further confirm the differences and gap of FM practice in the UK where FM is mature and has long been recognised as opposed to Malaysian FM industry, which is still lagging behind. In the next chapter, PERFM specifically the theories and key elements are introduced. In this chapter- chapter 8, further explanation of the elements of performance measures adopted from Phase 2 are presented.

CHAPTER 8: INTRODUCTION OF PERFORMANCE MEASUREMENT FRAMEWORK (PERFM)

8.1 Introduction

PERFM is designed as a tool that can be used by FM practitioners in Malaysia to enhance their service delivery. PERFM emphasises a measurable set of performance measures to measure FM performance. It should serve as a good base for the FM managers to assess the performance standard for both in-house and outsourced service providers.

PERFM emerges because there is a need for a holistic approach of PMS for more effective practices. The developed framework is clear and cohesive and can be well understood by all levels of managers and staff. It is well supported by the aggregative levels of performance measures ranging from performance metrics, indicators, attributes, to a balanced control of both performance target or formula and monitoring methods. The framework was developed as an iterative process that can enhance continuous improvement in FM services through effective measurement of service performance, staff training and development, and also through effective feedback. This framework offers valuable insights into the dimensions to be explored and scrutinised at each service delivery process. It incorporates both tangible and intangible aspects, which also allows sufficient flexibility in the process to perform against outcomes detailed in the Service Level Agreements (SLAs).

8.2 Theoretical Elements

The underlying theoretical elements of PERFM are people, process and property. Each dimension represents different justifications in structuring PERFM, as follows:

(i) People

- Focuses on the values for the business stakeholders, clients and customers.
- The involvement of people in various levels of service, i.e. decision-making process to the delivery of service. This refers to the decision maker (higher management), managing works (FM manager) and manpower supply (service workers)

- The benefits that each service brings to the people involved in the service delivery chain
- The proposed performance measures focus on the criteria and responsibility of the relevant personnel involved for each FM service

(ii) Process

- Focuses on the different levels and criteria of process for each service
- Process is the main catalyst that ensures the direction of each service and person involved
- The process involved in each service delivered must conform and comply to the agreed standards and quality requirements
- The proposed performance measures outline the performance parameters, metrics, indicators and attributes for each service process and element to ascertain a quality service delivery

(iii) Property

- The aim of the service to contribute to the property values and enhancement qualities
- Focuses on the property or building performance, i.e. building aesthetical value
- The formulation of performance measures aimed for both short- and long-term strategies and planning to enhance the property lifecycle value and contributions

The skeleton of PERFM is also shown in Figure 8.1 where the links between the underlying theories and the established categories and dimensions are established.

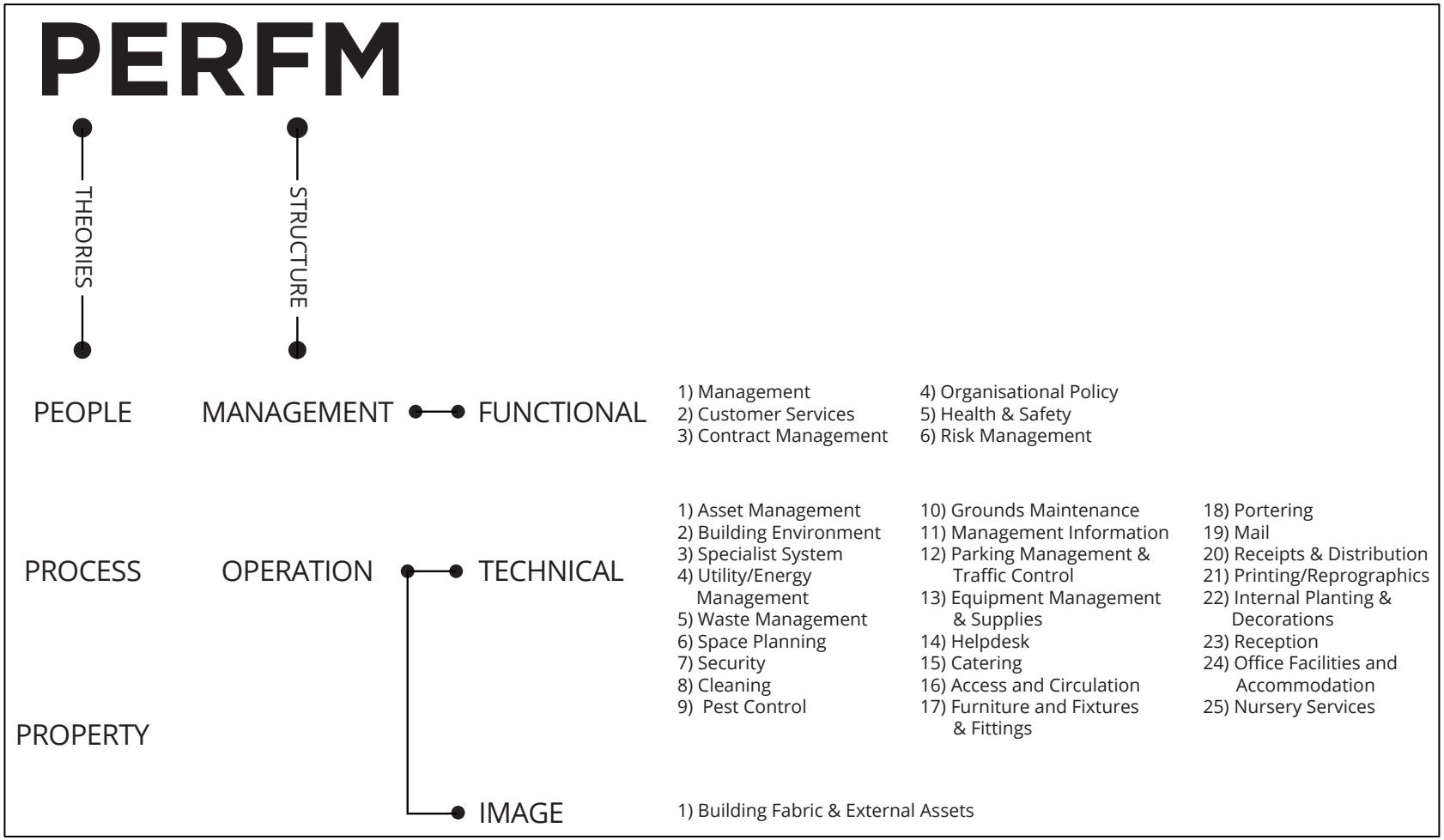


Figure 8.1: PERFM framework design

8.3 Structure of PERFM

PERFM is divided into three main sections each headed by a different dimension namely functional, technical and image (refer to Figure 8.2).

SECTION 1

Category	***Functional***			
Dimension	(1)	Management	(4)	Organisational Policy
	(2)	Customer Service	(5)	Health and Safety (H&S)
	(3)	Contract Management	(6)	Risk Management

SECTION 2

Category	***Technical***			
Dimension	(1)	Asset Management	(14)	Helpdesk
	(2)	Building Environment	(15)	Catering
	(3)	Specialist System	(16)	Access and Circulation
	(4)	Utility/ Energy Management	(17)	Furniture and Fixtures & Fittings
	(5)	Waste Management	(18)	Portering
	(6)	Space Planning	(19)	Mail
	(7)	Security	(20)	Receipts & Distribution
	(8)	Cleaning	(21)	Printing/Reprographics
	(9)	Pest Control	(22)	Internal Planting & Decorations
	(10)	Grounds Maintenance		
	(11)	Management Information	(23)	Reception
	(12)	Parking Management & Traffic Control	(24)	Office Facilities and Accommodation
	(13)	Equipment Management & Supplies	(25)	Nursery Services

SECTION 3

Category	***Image***	
Dimension	(1)	Building Fabric and External Assets

Figure 8.2: The proposed dimensions and parameters for PERFM

Functional category focuses on the dimension concerned in the management service delivery aspect. The identified dimension help to streamline the management structure and procedures involved in managing the whole service structure of FM services. Technical category proposes the set of dimensions that back up the operational services of FM such as the asset and building maintenance as well as other support services. These dimensions are considered the backbone in making sure all services are run smoothly and comply with the relevant standards and requirements. Image category focuses on the image of the property or building and the proposed dimensions can be used to ensure that optimal service efficiency is achieved in maintaining the image. The proposed set of dimensions for the respective categories is shown in Figure 8.2.

Each of performance dimension is matched with appropriate parameters, metrics and indicators which are also linked to the attributes which specify the performance measurement standard; formula or performance target which gives an indication of the performance target or calculation in ensuring the success of the attributes; and also monitoring method specified in monitoring the performance for each parameter. PERFM gives a good guide for FM managers to assess each of the performance parameters outlined for each FM service delivered to the customers or end users.

8.4 PERFM Categories

In the section 1, the functional category of PERFM focuses on the management aspect. The dimensions outlined for this section are management, health and safety (H&S), customer service, risk management, contract management and organisational policy. Generally the metrics and indicators outlined are concerned with the management aspects relating to the up keeping of administration system and control, staffing, H&S security compliance, customer service delivery, satisfaction assessment, contract management administration and the control assurance of organizational policy. Details on the metrics grouped for each functional dimension is shown in Figure 8.3.

In section 2, the technical category emphasises on the technical aspect of the FM service scope. It concerns on the 25 service operations dimensions- which parameters, indicators and attributes cover on the specific service specification in ensuring a smooth and satisfaction service delivered to the customers. The technical category is the main category that is dedicated to focus on the scheduled

maintenance and operation works and the three theoretical elements of people, process and property are embedded therein. The parameters for the respective dimensions in the technical category are illustrated in both Figures 8.4 and 8.5.

Section 3 of PERFM explores the image category with one dedicated dimension that is building fabric and external assets as shown in Figure 8.6. This dimension specifically outlines the parameters relating to building fabric and external assets and also maintenance of building elements. Specified attributes concerning the process and people involved are proposed accordingly to measure the property performance.

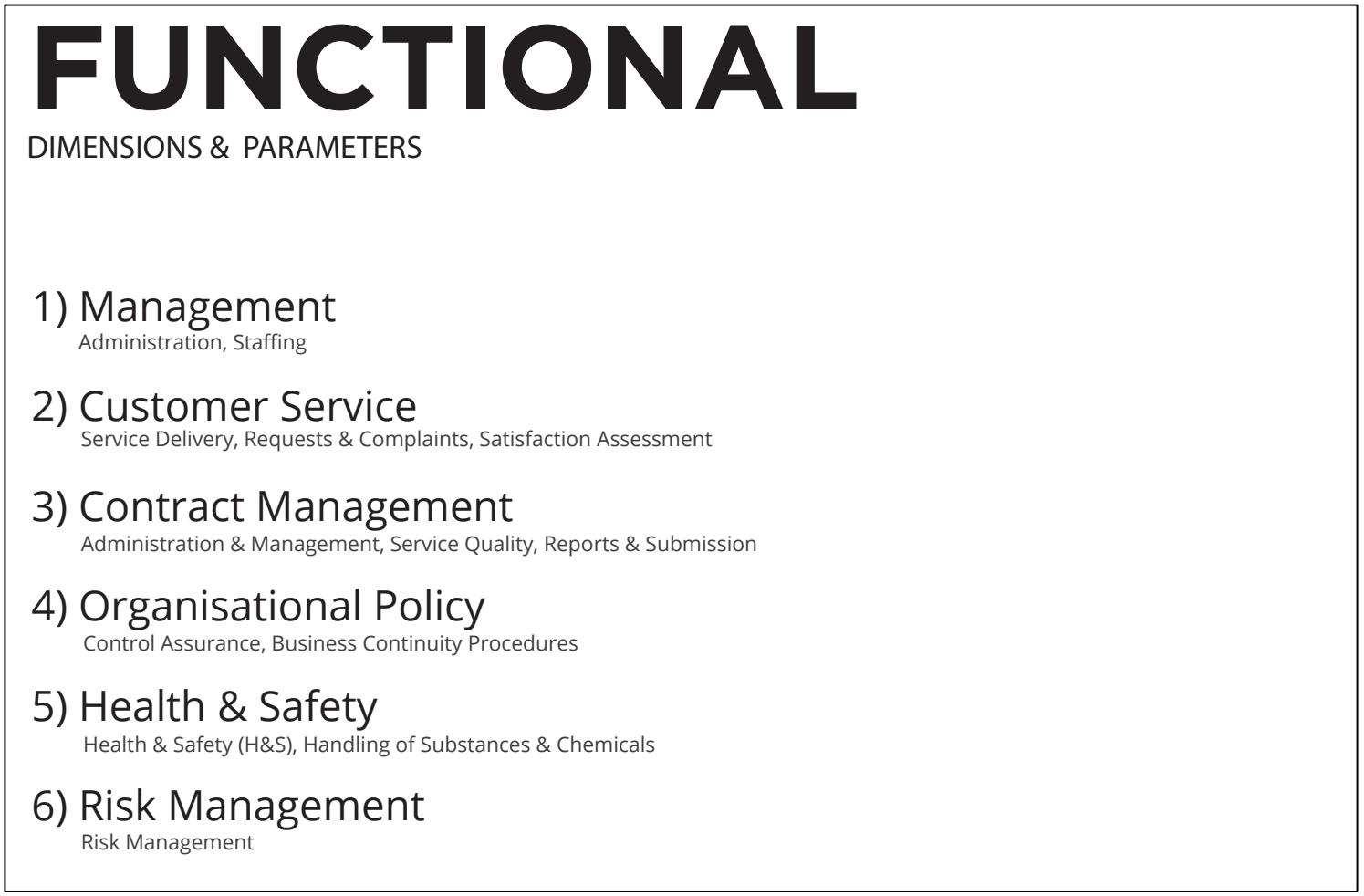


Figure 8.3: The dimensions and parameters for functional category

TECHNICAL

DIMENSIONS & PARAMETERS

1) Asset Management
Asset Management, Building Services, General Maintenance, M&E, Preventive Maintenance Services, Reactive Maintenance Services, Statutory Inspection.

2) Building Environment
Building Comfort

3) Specialist System
Building Management System, Fire Detection Supression & Alarm System, Public Address System, Security System

4) Utility/Energy Management
Procurement & Invoicing, Site Work, System Balance & Efficiency

5) Waste Management
System Procedural, Service Process

6) Space Planning
Major Reorganisations, Reconfiguration

7) Security
Management, Operations,

8) Cleaning
Work Guidelines, Cleaning Services, Equipment & Supply, Cleaning Materials, Control of Substances Hazardous to Health, Interior Cleaning, Exterior Cleaning, Specialist Cleaning, Immediate Response Cleaning, Reactive Cleaning, Special Cleanse, Feminine Hygiene

9) Pest Control
Treatment, Programmes

10) Grounds Maintenance
Planning, Landscaping Works, External Work

11) Management Information
Service, Reports

12) Parking Management & Traffic Control
Parking Management, Traffic Control,

Figure 8.4: The dimensions and parameters for technical category (I)

TECHNICAL

DIMENSIONS & PARAMETERS

13) Equipment Management & Supplies
Equipment Management, Communication Equipment, Connection Equipment & Cables, Supplies,

14) Helpdesk
Management, Support Service

15) Catering
Management, Purchased Goods, Hygiene and Quality Control, Staff Meals Service, Office Catering, Daily Catering, Drinks Section, Vending,

16) Access and Circulation
Access, Circulation

17) Furniture and Fixtures & Fittings
Furniture, Circulation,

18) Portering
General Portering,

19) Mail
Mail Processing, Mail Delivery & Collection, Executive Suite Personal Messenger

20) Receipts & Distribution
Administration & Management, Equipment & Cleaning, Receipt & Distribution Process

21) Printing/Reprographics
Service Process, Copies & Documents, Audits,

22) Internal Planting & Decorations
Internal Planting, Internal Decorations

23) Reception
Main Entrances, Support Services at Other Entrances,

24) Office Facilities & Accommodation
Office Room Facilities, Overnight Accommodation,

25) Nursery Services
Service Standard, Records, Policies & Procedures, Health & Safety (H&S), Catering,

Figure 8.5: The dimensions and parameters for technical category (II)

Figure 8.6: The dimensions and parameters for image category.

8.5 Chapter Summary

This chapter has presented an introduction of the developed PERFM, in specific the underlying theories embedded throughout the three categories of functional, technical and image. The performance measures are categorised based on the set of aggregative levels- dimension, parameter, indicator and attribute are matched with the relevant performance target or formula and also monitoring methods. The comprehensive list of the PERFM can be further referred to Appendix F.

Following the proposed PERFM, this research presents the analysis and findings gathered from the Phase 3 interviews. Therefore, the overview of PERFM explained in chapter 8 can be further understood and explored based on the evaluation made on the key elements that can determine the ability of PERFM to enhance the existing FM services in Malaysia.

CHAPTER 9: INTERVIEWS DATA ANALYSIS

In this chapter, the findings from the data analysis of Phase 3 are established. The evaluations of the elements that constitute PERFM are presented. Feedback received from the interviewed FM managers has been analysed to evaluate the design of framework, functionality and implementation of PERFM. A summary of feedback is also presented at the end of this chapter.

9.1 Introduction

The aim of interview conduction at Phase 3 was to evaluate the ability of PERFM to enhance the existing FM services in Malaysia. Semi-structured interviews were conducted with the 8 FM managers who participated in the Phase 2 case studies. Three major elements were looked at in the evaluation studies, as follows:

(i) Design of Framework
These PERFM design factors are reflected: structure and layout, content elaboration, principles and scopes.

(ii) Functionality
Evaluation of the functionality factors, namely flexibility, productivity, quality, delivery, and cost control.

(iii) Implementation
Interviewees were asked to provide feedback on four elements: project management, demands, challenges and also recommendations.

Thematic analysis was conducted using NVivo, where the co-ordination of three types of three nodes was established, i.e. high-level themes, mid-level themes and low-level themes. They were illustrated in thematic diagrams for better understanding.

9.2 High-Level Thematic Analysis

There were three main or high-level themes discussed during the interviews, which produced a total number of 74 passages. The term 'passages' here refers to the comments or feedback from the interviewees. Each high-level theme was also paired with respective mid-level themes. The three high-level themes - design of framework, functionality and implementation - are shown in Figure 9.1.

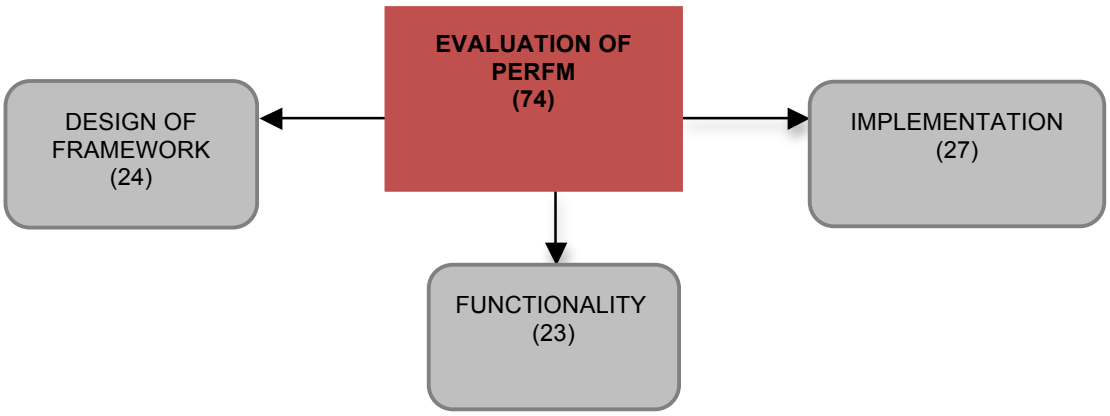


Figure 9.1: Thematic diagram of the elements for the evaluation of PERFM

The colour coding indicates that the grey colour referred to the high-level themes, i.e. design of framework, functionality and implementation. As for the mid-level themes, their colour code is brown. Blue was used for the low-level themes.

9.3 Design of Framework

A total number of 24 passages were established for the first high-level theme: design of framework. These passages were derived from five mid-level themes, i.e. structure and layout, content elaboration, principles and scopes, as shown in Figure 9.2.

The interviewees provided several opinions (8 passages) on the structure and layout of PERFM. Three interviews commented that the overall layout was very structured and precise. Six interviewees believed that the framework was comprehensive and detailed. One interviewee claimed that, "The framework is objectively designed and focusing on the right targets". Four other interviewees also noted that the presentation of the layout was consistent and helped them to identify the different headings and groups. Three of the interviewees agreed that there was

a clear separation or grouping between the service groups and scopes. They believed this ensured the smooth flow of the contents. One interviewee added that the aggregative level of PM indicators (e.g. parameters, metrics, indicators, attributes) would assist the FM managers to position their performance measures accordingly. He further added, “The hierarchical levels also show us which part of the service process is missing”. This was because the aggregative levels were arranged to follow the sequence of processes involved in the respective service scopes

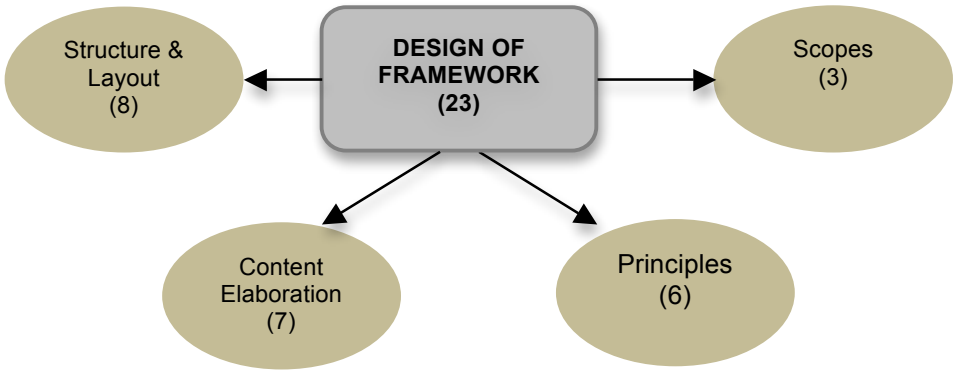


Figure 9.2: Thematic diagram of the design of the framework element

All the interviewees also gave positive comments (7 passages) on the content elaboration of PERFM. Six interviewees claimed that the contents were very straightforward and categorised accordingly. One interviewee noted, “Although the framework is very long and elaborative, the indicators presented are straightforward and easy to understand”. Two interviewees also indicated that the contents were relevant for the PM of FM. One interviewee further added, “It informs what performance measures are relevant to which scope”. All the interviewees were also impressed with the way the performance measures were organised and linked to the relevant performance formula or targets and monitoring methods. They believed that the contents were well elaborated and also provided a high level of information for FM managers.

There were 6 passages that were established for the principles of the framework. The interviewees gave good responses regarding what they thought of the overall principles or approaches of the PERFM. Four interviewees noted that PERFM indicates the relationship measures and the service targets. Both interviewees from the two healthcare organisations further claimed, “The link between measures and targets is important for our operations as it points out which service level that we have failed to achieve”. Six of the interviewees also gave similar comments, that

they can understand and convey the main principle of PERFM, which is to achieve maximum efficiency. An interviewee from a retail organisation noted that he could see the approach of PERFM was also to build understanding and knowledge of the types of service processes and standards involved. Another interviewee added, “FM managers will have more knowledge of the service expectations and standards as outlined in PERFM”. A consensus was gathered from all eight interviewees, where they believed that PERFM is customer-oriented and aimed for improvements in service delivery and monitoring.

Three interviewees provided comments (3 passages) on the scope of PERFM. Two of them commented that the scope was well balanced as it incorporated both management and operation scopes of services. They believed that these two service aspects were rarely being categorically indicated in any PMS. They also believed that both scopes were fairly weighted, where more emphasis was given to the operations scope of services due to its complexity.

9.4 Functionality

The second high-level theme evaluated was functionality. It has established comments (25 passages) from the interviewees regarding the five associated mid-level factors, i.e. flexibility, productivity, quality, delivery, and cost control (refer to Figure 9.3).

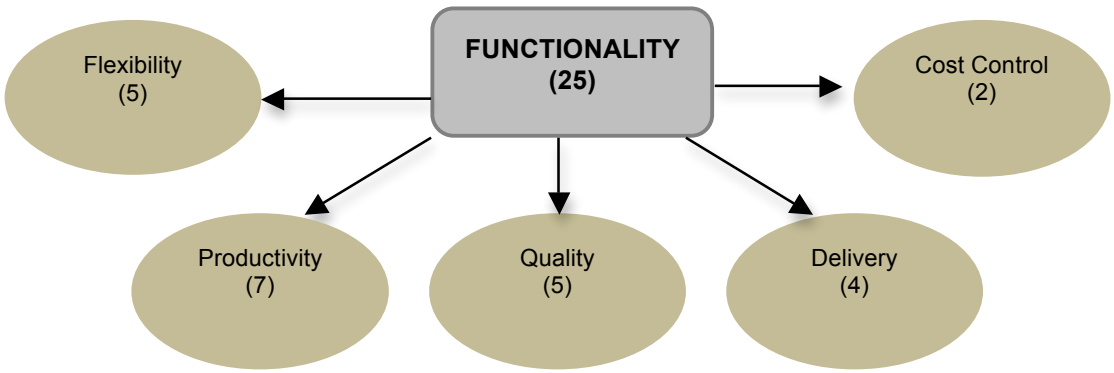


Figure 9.3: Thematic diagram of the functionality element

Five passages were summarised for the flexibility factor. Both interviewees from healthcare organisations and one interviewee from a retail organisation believed that, although PERFM has a long list of structured performance measures, it is not too rigid. Four interviewees agreed that PERFM is flexible to changes. One interviewee specified, “It seems flexible to any changes, either the service scope or

other circumstances, be it urgent or not". Two interviewees also commented that they believed that, with the structured and specified performance measures elements, FM managers could adapt to the changes with less disruption. One interviewee also signified the flexibility factor, where he believed that, with the comprehensive framework ready to hand, FM managers could have a smooth transaction of handing over new management to a newly appointed outsourcing companies. Two other interviewees also noted that PERFM comprises the standard service levels and regulatory compliance, and therefore it can be easily linked to a general company's mission and objectives.

All the interviewees were also asked about the productivity of PERFM, i.e. how they believed PERFM could contribute to their productivity level, and seven passages were established. Three interviewees agreed that PERFM could provide a good management of sources, with one interviewee stating, "PERFM can help us to manage our labour, money and time". One interviewee from an office building organisation signified that it could also assist and improve the decision-making process. All interviewees also believed that PERFM provided both short- and long-term views of the overall strategic performance objectives to be emphasised in FM service. This would help them to strategise their FM objectives and aims. All of the interviewees also shared the same consensus in two other aspects. First, they believed that PERFM would increase their efficiency level. Second, they agreed that their productivity level would be enhanced as the maximum potential of resources could be utilised.

As previously explained in the literature, quality is one of the fundamental elements in delivering services. Five passages were established for this mid-level theme. All eight interviewees believed that PERFM could help to enhance the service quality, particularly through five different approaches (5 passages). One interviewee believed that the specific performance indicators and targets would help them to understand and focus on the targeted deliverables. Three interviewees - the two from retail organisations and one from an office building organisation - signified that the performance measures would be useful in helping FM managers to formulate and implement quality strategies. Three interviewees also noted that the management process would also be more organised, with one of them claiming, "This would help us to strive for quality, now that we have a more organised management process". One interviewee noted that PERFM would assist FM managers in setting priorities for their quality targets. She further added, "Quality

service is all about delivering the right service to the customers. Setting priorities would ensure that we are doing the right thing at the right time". Another interviewee also emphasised that, by having a predetermined set of performance formula, targets and monitoring method, the quality of audit or assessment could be enhanced accordingly. His claim was, "FM managers now can improve their audit or assessment, because the performance formula and monitoring process are specified. The outcomes can be easily measured and monitored every month".

Interviewees were also asked about how they believed their delivery process could be enhanced with the implementation of PERFM. Four positive passages were concluded. Interestingly, more than half of the interviewees (5 interviewees) agreed that having all the performance measures in place would help to increase the speed of service delivery, with two interviewees from finance organisations mentioning the word 'product'. In general, the services were also regarded as a product, the same as the outcome of a process. One interviewee further added that, "In fact the product can actually be delivered earlier to the customers". An interviewee from the retail organisation noted that the service promptness could also be improved. Two interviewees also commented about positive improvement in the delivery process, in which one of them said, "As the performance measures cover the relevant processes for each service scope, a FM manager would find it easier to focus on each level of the delivery process". She further gave an example of the waste management service where a FM manager could focus on each process level from segregation to collection, and improve them accordingly. Two other interviewees also noted that having a set of performance attributes and respective delivery targets should help the FM managers in setting the delivery targets that service providers aim to achieve for each service.

Four interviewees were optimistic about how PERFM can contribute to the cost control of FM services. Two passages were established, where one of them was that PERFM eliminated non-value added activities. Two interviewees agreed about this, believing that the performance measures give a transparent evaluation of the significance of each process or element. Two other interviewees also claimed that the measurable elements play a significant role in ensuring that the delivered services are cost-efficient.

9.5 Implementation

The interview participants were also requested to give their feedback on the implementation of PERFM, particularly on these aspects: project management, demands, and challenges. This is shown in Figure 9.4.

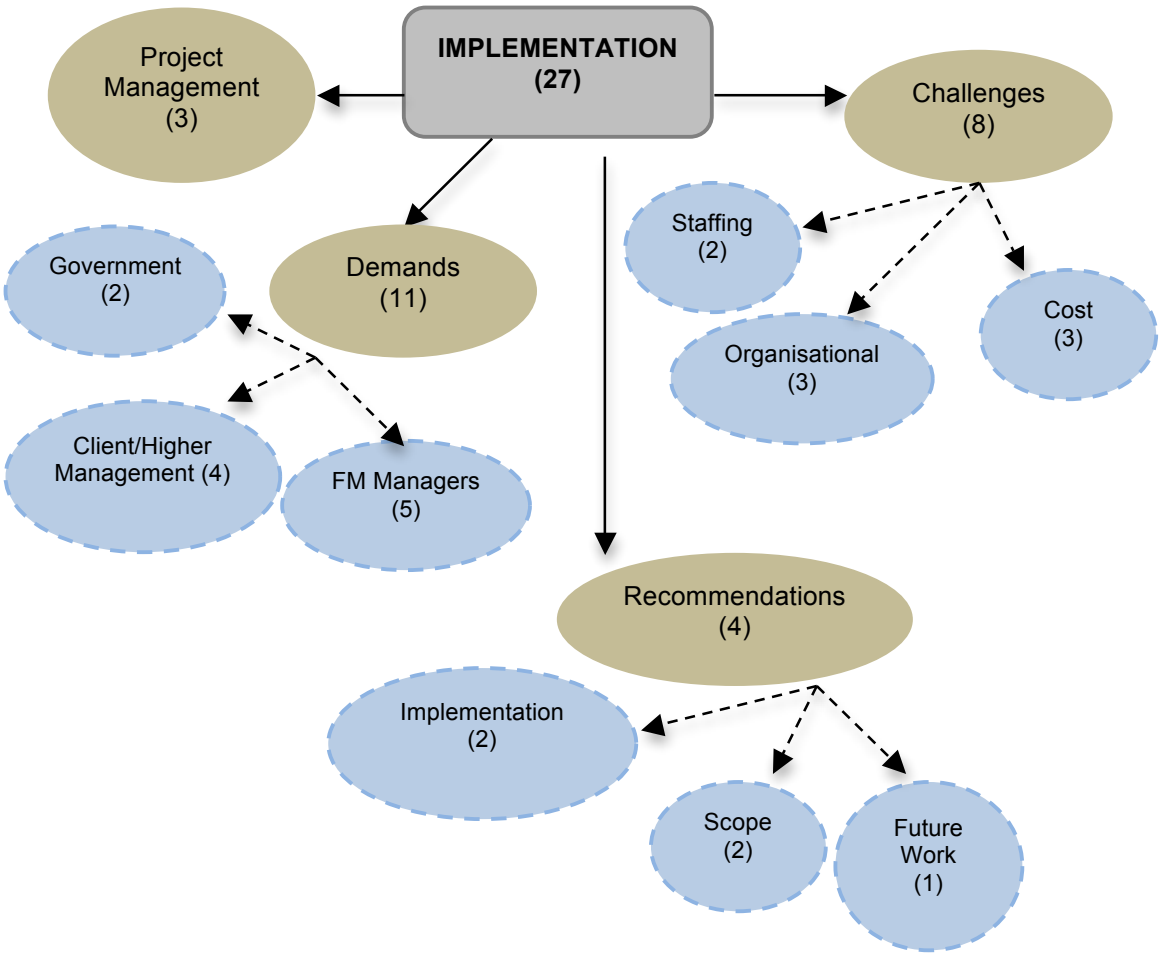


Figure 9.4: Thematic diagram of the implementation element

Two passages were established regarding the project management of PERFM. Three interviewees believed that they need the higher management's support in order for the FM department to implement FM. They further added that encouragement from the higher management would help other departments to realise and understand the service levels and urge them to cooperate accordingly. Five interviewees had also foreseen that FM managers would require an additional budget to be relocated by the higher management to support the implementation of a new comprehensive framework like PERFM.

The interview participants also gave positive comments (11 passages) for the demand factors. Generally, the comments or demands can be categorised into three low-level themed categories: government, client/higher management and FM managers.

Seven interviewees mentioned the two demands (2 passages) that might be acquired by the Malaysian government. Four of them believed that there was a demand by the government to have the PERFM as a standard guideline to standardise all the FM service level practice in Malaysia. This could be related to the lack of initiatives taken on FM practice, particularly on the service and measurement process at present. Three other interviewees also believed that the government would additionally demand the implementation of PERFM to ease the monitoring process of all FM services to the public and at the public offices.

The interviewees also related four comments (4 passages) on how there might be some demands from the client or an organisation's higher management. Three interviewees believed that the client/higher management would demand PERFM in order to increase an organisation's overall productivity. Two interviewees agreed that they would require the framework to have a better control of all the resources. Five of the interviewees claimed that there would also be a demand for an efficient budget or financial control, to which PERFM would be able to contribute significantly. Two interviewees also noted that the client/higher management would see PERFM as a tool for them to ensure that both internal, i.e. the organisation's requirement, and external standards, i.e. regulatory standards, are complied with by the FM department.

The interview participants also shared some consensus (5 passages) on the potential demands from the FM managers. Four interviewees believed that FM companies in Malaysia would see PERFM as an enhancement tool to implement a strategic FM practice. One of them claimed, "It is time for us to practise strategic FM, and PERFM would be a great tool to help us start measuring our service performance efficiently". All eight of the interviewees also anticipated that there would be a high demand from FM managers to use PERFM to have a better control of both FM services and the service providers. Five interviewees also noted that FM managers would realise that PERFM can serve as a means to enhance their existing service. Two of them believed that FM managers would also demand PERFM to help them in prioritising the scope of services.

The interviewees were also asked to give some opinions on what challenges they would anticipate in implementing PERFM. Seven responses (8 passages) were received, which concerned these factors: staffing, cost, and organisational. Five interviewees expressed their concerns on the staffing factor. Two of them noted that there might be a problem in relation to staff turnover. New staff would require some time to understand the whole process and become familiar with all the performance measures, and a high turnover of staff would demand a high dedication of time and expertise from other staff. Three interviewees further anticipated that any party, i.e. the Malaysian government, an organisation's higher management and FM managers, might find some challenges in reallocating new roles and resources and setting new limitations in adapting the newly improved measurement practice.

All of the interviewees also expected some challenges (3 passages) with regard to the cost factor. Five of them expected that the implementation of PERFM would require a new allocation of investment budget. All of the interviewees also believed that a higher budget needed to be allocated to the FM department. This is because additional sources, e.g. equipment, provision of new space, storage and administration tools, were required to enhance their services. Two interviewees expected that there would also be a higher cost of outsourcing services quoted or charged by the service providers due to the change of service scope and arrangement. All these claims were foreseen to be the challenges in adapting PERFM.

The interviewees also provided some insights (3 passages) regarding the expected organisational challenges. Three interviewees agreed that it might be challenging to acquire a commitment of time and energy by the staff involved. Five interviewees signified that the implementation of PERFM would bring FM services to a new level in the organisation. The higher management was expected to provide more diversified FM roles, and it was felt that FM services might face some challenges in carrying out the new responsibilities and functions. One interviewee also claimed that there would be a new demand from both internal (clients on site) and external management (headquarters).

The final question of the interview was to request the interviewees to provide any suggestions or recommendations for PERFM. A total number of four comments (4 passages) were summarised from three related mid-level themes: scope,

implementation and future work. Two interviewees suggested that the scopes of monitoring method should be further elaborated. They believed that FM managers would have a systematic way of managing monitoring methods (e.g. inspection, quality audits) if more elaboration and focus were given to this aspect. One interviewee suggested that additional content focusing on the roles and responsibilities of the key parties involved in all the outlined performance measures process is needed. He believed that this would help to identify who are responsible at which stage, and what are the expected roles and responsibilities. Two other interviewees believed that a support service is needed when first implementing the PERFM. The conduction of training would be a good preparation exercise prior to implementing the new measurement approach. One interviewee also gave a future work suggestion, in which he claimed, “Perhaps the future work should evaluate the effectiveness of PERFM, so it can be further revised”.

9.6 Summary of PERFM Evaluation Themes

The analysis has indicated that all the interviewed FM managers in Malaysia positively evaluated the PERFM. Overall, positive comments were given on the design of the framework, its functionality factor and also the potential implementation factors. The interviewees believed that the PERFM was appropriately designed by incorporating the relevant elements for the measurement exercise. The overall structure and layout was also well received, and PERFM contents were appropriately elaborated. The interviewees also managed to acknowledge the underlying principles of PERFM and all of them were aware of its customer-oriented and improvement-monitoring approaches.

Interestingly, the interviewees also provided positive feedback on how PERFM’s functionality could enhance their existing service. Based on the comments, it was evident that PERFM was regarded as flexible to changes and having the potential to increase the FM service productivity level. It was also anticipated to improve both the service quality and delivery of the process outcome. It was also noted that the interviewees were aware of the potential contributions of PERFM to cost control.

Based on the feedback of the implementation of PERFM, it was noted that the interviewees had some concerns on the project management process, e.g. a higher management support and new allocation of roles. The interviewees were also very positive in anticipating the demands from three related parties: government, client

and FM managers. However, a few challenges from staffing, cost and organisational aspects were anticipated. Finally, they also gave some recommendations to improve the scope of PERFM contents and implementation method, as well as recommending work to be carried out in the future. A summary of Nvivo thematic analysis diagram can be referred to Appendix E.

9.7 Chapter Summary

In summary, this chapter has presented the findings from the evaluation studies of PERFM based on the design of framework, functionality and implementation. The findings also demonstrate that the potentials of PERFM were positively acknowledged by the FM players participated in the interviews. These findings and feedback complete the whole process of evaluating the performance measures proposed in PERFM.

Next, the conclusions and the recommendations of this research are presented in the final chapter that is chapter 10. In chapter 10, the research aim and objectives were revisited where summaries of the conclusions achieved are elaborated accordingly. This chapter also explains further on the proposed recommendations, research limitations faced as well as the contributions of knowledge as a conclusion of this study.

CHAPTER 10: CONCLUSIONS & RECOMMENDATIONS

In this chapter, the key conclusions that are reflected throughout the thesis are presented. The conclusions are linked back to the research aim and objectives, and the findings that have been derived from the literature review and all the three phases of data collection and analysis. The research limitations are also explained, to give an overview of the constraints faced in conducting this research. A set of recommendations and the research summary are presented to conclude this chapter.

10.1 Reflection on the Research Aim and Objectives

Based on the research problem, this thesis proposed two research questions:

(i) *What are the key elements in measuring FM service performance?*
(ii) *How can FM organisations in Malaysia measure their performance strategically, using a practical framework?*

Therefore, this research proposed the following aim to answer the research questions:

(i) *To develop a PM framework that FM organisations in Malaysia can use to implement and enhance service delivery*

To systematically investigate this aim, four objectives were derived:

(i) *To understand the current thinking on FM and PM globally, with a specific focus on the Malaysian context.*
(ii) *To understand the elements of effective PM both in theory and practice, looking at Malaysian and UK case studies.*
(iii) *To develop a PERFM to be used by Malaysian FM practitioners:*
    a. Identify the key components of PM, drawing on the key findings from Objectives 1 and 2;
    b. Use knowledge from Objective 2 to obtain the current position of both Malaysian and UK organisations;
    c. Produce PERFM based on findings from Objectives 3a and 3b.
(iv) *To evaluate PERFM's ability to enable FM practitioners in Malaysia to enhance their existing FM service delivery*

10.2 Summary of Conclusions

Four sets of conclusions have been established, which were derived from the research aim and objectives. The conclusions were devised based on the adopted mixed methods research design and the incorporation of the literature studies and findings from all phases of data collection. Based on the empirical findings, this study proposes the following propositions:

10.2.1 Conclusion 1

A literature review of both FM and PM has shown that both subjects have been established on their own, and the integration of PM elements in FM is essential in exercising the strategic development process and practice of FM. A study of both literature and data analysis findings has also indicated that the FM industry in Malaysia is still lacking in innovation, and the implementation of strategic PM in FM is still low.

Based on the literature review, FM can be said to have established itself as a key service sector and started to emerge as a response to the business environment. It fits well into the overall business agenda as it identifies the influences required for change in the business environment and develops facilities to accommodate it. FM provides an improved strategic context of services, where both effectiveness and efficiency are achieved. Generally, clients understand the contribution of FM in reducing unnecessary costs and creating a better working environment. However, in order to deliver a business enhancement progress, a collaborative relationship among clients, users and FM teams must be established. This way, the growth and development of FM can be supported, and FM can continuously support core business in both the short- and the long-term. It was also emphasised in the literature that FM should be applied from a strategic approach, where the function is seen to be able to add value to the organisations. This can be achieved by embedding the concept of PM into the service delivery and implementing all the strategic approaches and models available.

PM identifies opportunities for progressive improvement in performance and ensures that added value is achieved. Although there is a trend towards reviewing FM practice in PM, PM in FM is a less developed area in the literature. The performance constructs are neither well established nor standardised. The growing

need to measure performance is in contrast with a lack of systematic process for determining an appropriate measurement.

The concept of PM has been embraced by FM managers, who use it as a benchmark against which effectiveness can be measured and as a basis by which improvement can be implemented. Measurement is essentially a cost reduction method and its application is much needed in large companies in order to enhance efficient use of resources. Previous studies have also demonstrated that there is an absence of an evaluation mechanism and a robust PM approach within academic research. This could be the main reason for the lack of a comprehensive set of performance indicators and measures for FM. The established knowledge and understanding from the literature and pilot study (Phase 1 data collection) findings indicated that there is a huge opportunity for the exploration of both PM and FM scopes. FM functions are not measurable, thus there is a need to develop performance indicators. The measurement of FM will help to exercise the strategic development process and enhance the learning process in the organisation.

It can be summarised from the literature review that FM in western countries is much more progressive than in eastern countries. Some Asian countries like Japan, Hong Kong, Singapore and South Korea have shown positive developments in FM. However, the growth of FM in Malaysia is slow and still in its infancy. It was noted that the scope of PM in FM is not well developed. FM in Malaysia is still lagging behind other Asian and western countries. There are several factors that can be considered in understanding the FM industry in Malaysia, namely level of growth, practice, service, profession, opportunities, demands and challenges. Both the literature review and findings from the Phase 1 data collection suggested that there are a few factors that hamper the development of FM in Malaysia. A few examples of these factors are that the current practice is more focused on short-term decision making, more reliant on software as a solution, lacks a strategic planning skill, and has no proper sample or guidance of measurement, problems identifying suitable measures, difficulties in evaluating the relative importance of measures, as well as lack of awareness and understanding of the importance of PM in FM. Previous literature studies have also suggested that the general lack of understanding and progress are among the contributing factors for the slow development of FM in Malaysia.

Despite government initiatives in building up the profession, public awareness is still low and the practice of FM in Malaysia is not yet up to par with FM industries in other countries. It was observed that the steps taken by the Malaysian government were slow and were not being fully enforced. The lack of recognition by the government in establishing FM professions in the government bodies has indicated that it is not yet fully accepting FM. It can be seen that Malaysia has underutilised FM's capacity to improve the country's economic and development future.

It was also noted that there are opportunities and demands for the FM industry to progress successfully in Malaysia. There is a growing concern among the building owners to maintain the performance and life cycle of their properties. There is also a demand for a strategic model to measure their performance and this could overcome the challenges and issues faced in the Malaysian FM sector. There is also a strong outsourcing demand for FM as a third party, especially since the recent combination of outsourcing and privatisation by the government.

In summary, the FM scenario in Malaysia is still lacking an FM culture, is passive, and is in need of radical changes to move forward. Proper planning to cultivate the awareness and understanding of FM is greatly required to improve the low service quality in Malaysia and to enable the FM industry to progress in the competitive business environment.

10.2.2 Conclusion 2

An understanding of elements for effective PM in theory and practice are derived from three categories, namely aims, development and implementation. By analysing some established trends of PM practice by FM industries in Malaysia and the UK, it was evident that the FM companies in the UK adopt a customer-oriented PM, in contrast with the service-provider PM approach adopted by FM companies in Malaysia.

Studies of both theory and practical reviews have suggested that there are three elements that need to be emphasised for effective PM: aim, development, and implementation. PM functions as a process of determining how successful organisations or individuals have been in attaining their objectives and strategies. It is able to indicate problems and areas for continuous improvement. The aim should be in line with the organisation's corporate and functional strategies and objectives. This way, PM will provide a good feedback and also build understanding among the people involved with the measurement. Organisations need to be clear about the goals when measuring performance, so that they can monitor and maintain the organisational processes aimed at achieving their goals and objectives.

Once the aim of measuring performance is set and well understood by the staff involved, the development process needs to be given a focus. In the development process, organisations need to make sure that their PM frameworks incorporate a multi-dimensional set of performance measures. The performance measures must be balanced between financial and non-financial, and also objective and subjective measures, which focus on management and technical scopes of service. These performance measures must provide a timely, relevant and accurate feedback from both short- and long-term perspectives. The set of PM frameworks should emerge as a tool for companies to align their performance with strategic goals. The development process of the PM framework should include the participation of corporate or top management and FM staff in making sure that all the cause and effect relationships between the performance measures are developed and the business performance is established.

The implementation of PM would require a high level of support from the top management and commitment from the staff involved in the PM framework process. The key staff involved need to understand the orientation to process, i.e. whether

PM is the input or outcome of some processes. The key staff need to explore in what situations are the frequently used performance measures appropriate and able to be efficiently implemented.

Case study evidence strongly suggests that there are clear, significant differences in PM implementation by the UK and Malaysian companies. The UK organisations have a more structured and comprehensive set of performance measures, with more emphasis given to the conformity of the agreed service standard and regulatory standard. The approach adopted is customer-driven and it directly influences the emphasis of service contributions to meet the customer's expectations. An effective development process is also involved, including good communication and involvement from both FM staff and service providers, who also gave a full commitment throughout the implementation process. It was also observed that the reduction in service cost was not the main pressure but that there is a growing and continuous need of the FM organisations to differentiate themselves from their competitors in terms of service quality, i.e. the conduction of external benchmarking. The organisations also considered the complexity of service offerings, and therefore adopted a comprehensive set of PM indicators that also comprise the performance outcomes, delivery characteristics and monitoring actions. Their set of PM indicators defined the specification of service concept and performance targets in their attempts to adopt a high degree PM in FM practice. They were confident that they could offer precise service targets based on a clear identification of service performance standards. They also believed that this could lead to a better utilisation of resources and a tighter cost control. These companies believed that they are able to show their strategic FM role by improving the service performance. Their feedback on PM outcomes also demonstrated that the service performance indicators were contingent upon the overall service delivery success. It was also observed that the companies have claimed to be able to meet both their corporate and functional strategies; this was delivered through a holistic set of PM indicators. In general, the study summarised that the UK companies measured the success of their delivery not only in terms of financial performance but also in relation to other performance criteria such as competitive performance and quality.

Analysis of the Malaysian case studies has demonstrated that most of the organisations have developed policies and regulations regarding H&S in their workplace but lack the abilities to demonstrate in the performance indicators that these regulations are adhered to. The organisations also adopted a set of

performance indicators that focus on the management aspect, and the range of performance indicators according to service process and compliance was limited and highly dependent on the service provider's SLAs. It was found that the organisations also failed to translate their service targets into explicit service specifications on the basis of which the service delivery system may be designed. There was also no specification of service technical parameters being defined in their set of performance indicators, with the exception of healthcare companies, who proposed a brief set of performance indicators that need to be further referred to SLAs. The Malaysian case study organisations also exercised no discretion over the compliance of each FM service, because they were confident that the service providers would adhere to the statutory requirements due to the service providers' reputable image. This showed that the compliance process was loosely controlled and the organisations were reliant on the service providers' judgement with regard to the conformance with statutory requirements. They also claimed that it was more difficult to automate process tasks because of the complexity of the activities performed and the definite performance targets and tolerance not being set. This has indicated that the performance indicators are largely pre-determined by the service providers, which gives FM managers less control of the services performed by the service providers.

It was also observed that the company culture has an impact on the implementation of PM in FM. The top management of the Malaysian case study organisations are not very involved in the FM service and therefore both they and their clients have no clear understanding of the impact and benefits of PM when embedded into the FM services. The nature of service delivery, which was more on a reactive and corrective basis than on a proactive one, also affected the awareness of service performance in FM.

Findings from both Malaysian and UK healthcare organisations have suggested that the FM service in healthcare and retail sectors with heterogeneous and sophisticated or specified customer and client requirements requires complex measures typified by multiple configurable parameters as well as a high level, very involved, relationship with top level management or client and also service providers.

It can be summarised that the greater the PM is customised, the more the service delivery systems are discretionary, subjective and uniquely designed. Although a

simple set of PM elements may seem doable, it would actually constrain performance capacity. It can also be concluded that PM indicators in the UK are customer-driven, whereas the PM indicators in Malaysia are service-provider-driven. The elements of PM in FM service in the UK organisations are much more advanced and holistic compared to the case study organisations in Malaysia. It is believed that the mature FM industry with various sources of FM quality standards has enabled the UK organisations to precisely specify and to tightly define task and activities' requirements. Therefore, the implementation of PM indicators or frameworks by the UK organisations is exemplary and could be used to develop the PERFM.

10.2.3 Conclusion 3

PERFM, a performance measurement framework, was developed by integrating both the elements of PM from literature reviews and case study analysis. The underlying theory of PERFM is to assimilate the elements of people, process and property. PERFM comprises measurable performance measures (i.e. parameters, metrics, indicators, attributes), performance target or formula and monitoring methods. This structured framework is designed as a tool for FM practitioners in Malaysia to enhance their existing service delivery.

Findings from the Phase 2 analysis have demonstrated that the performance measures used by the UK case study organisations are far more comprehensive and structured than the ones practised by case study organisations in Malaysia. The performance measures proposed in PERFM were incorporated from the best measurement practised from the data analysis and also within the literature studies.

PERFM was developed based on a theoretical framework consisting of three elements: people, process and property. It focuses on the values that can be provided for the people, i.e. clients and customers, and also the incorporation of various key parties in different levels of the service delivery process, that is, from decision-making to the implementation of PERFM. The principle of PERFM is to emphasise the performance measures involved in the FM processes. The conduct of FM processes will determine the quality of the service or end product being delivered to users. The objective of PERFM is also to contribute to the property added values and enhancement qualities for both short- and long-term performance. The unified theory is essential in supporting PERFM's role as a holistic framework

that can offer valuable insights into the service dimensions to be explored and scrutinised at each service delivery process.

PERFM is a flexible tool that can be adapted to changes as it includes both tangible and intangible aspects. As suggested in the literature study, both management and technical aspects of FM were given emphasis. There are three main sections of PERFM, which are functional - which focuses on the management aspect - and also the technical and image aspects- which constitute the technical facet of FM services. A good management reporting is essential in streamlining the management structure and procedures in managing FM. Technical measurement would be useful in making sure the operational side of FM services is run smoothly. Image focuses on achieving an optimal efficiency of managing the property's performance.

PERFM was developed in response to the demand for a greater accountability of PM framework. It is clear, cohesive and can be well understood by all levels of FM managers and staff. It is well supported by the imperative elements of PM and allows a sufficient flexibility for service providers to perform in relation to the outcomes detailed in the SLAs. PERFM's aim is not only to provide a satisfactory working environment but also to foster service offerings, which can optimise the building service values.

PERFM seeks to foster the thinking of FM managers by helping them to conceptualise the PM principles embedded in PERFM. It is anticipated that PERFM can contribute significantly by comprehensively calibrating the effectiveness of services. Its comprehensive set of performance measures shows a wider applicability for a holistic assessment of a wide range of facilities. This framework can serve as a baseline for a comparison in order to measure the performance in terms of achievements and improvements. It was evident from the literature review that the practical uses of performance indicators are normally as industry-specific or organisation-specific indicators. It is suggested that PERFM can be used for both in government or private sectors, and has incorporated the relevant elements to cater for the FM services in a few organisational categories, namely healthcare, retail, finance and office buildings.

10.2.4 Conclusion 4

Evaluation findings have demonstrated that PERFM embeds positive qualities of an effective PM framework. Positive feedback was received on the overall design of the framework, its functionality, and the potential implementation of PERFM within an organisation. It is envisaged that PERFM has the ability to enhance the FM service delivery in Malaysia, which can contribute to a better FM practice.

Analysis from the Phase 3 evaluation study has indicated positive comments regarding the design of framework, functionality and implementation aspects. The overall structure and layout was well received, and the contents were perceived to be well elaborated, providing a high level of information. It was also claimed that the incorporation of management and technical aspects appeared to be balanced, when more emphasis had been expected for the technical aspect of FM services.

The feedback also indicated that PERFM is not rigid but is flexible to changes. It was seen as an appropriate tool to enhance levels of speed of delivery, quality and productivity. PERFM's introduction of a good management of sources could also contribute to the cost control aspect.

In the implementation factor, constructive feedback was given on the project management aspect. It was evident that strong support from higher management was required to fully implement PERFM. A few responses regarding the potential demands of PERFM were received, which were expected to be from the government, clients and FM managers. It was predicted that the government would demand PERFM as a tool to standardise the FM practice, which would also ease the monitoring process of FM services. Clients were also potentially expected to demand PERFM to increase the organisation's overall productivity and manage their financial control strategically. As for FM managers, there was a high anticipation that they would need PERFM as an enhancement tool for implementing strategic FM and taking full control of the service providers' performance.

A few challenges were also foreseen in respect to the staffing, cost and organisational aspects. It was suggested that there might be challenges in the issues of staff turnover and reallocating of new roles. There were also expectations about a new allocation of investment budget and higher outsourcing services within the organisations. There were also concerns regarding the challenges that might

arise from the high commitment of time and energy that is greatly required from the key people involved in the implementation process, and also in carrying out the new roles and responsibilities.

Several recommendations were also suggested, for example, more focus should be given to the monitoring methods and key people involved in all the processes and levels outlined in PERFM. It was also suggested that conducting training would suffice as preparation prior to commencing PERFM. A suggestion of future work to evaluate the effectiveness of PERFM was also noted.

In summary, the positive responses of PERFM indicate that it has been well accepted and evaluated. As a final output of this research, PERFM is anticipated to improve the current scenario of FM generally and to improve the quality of service so that the public will recognise the importance of the FM profession.

10.3 Research Limitations

One limitation in conducting the research was addressed, as follows:

(i) Constraints in getting the responses from the pilot study questionnaire survey– due to a lack of co-operation and awareness in FM. A considerable amount of time was taken to conduct the survey because some potential respondents were reluctant to participate when approached by the researcher. It was suspected that the awareness of the FM practice in Malaysia is still low due to the fact that the industry is still not as fully developed as in other countries, e.g. the UK and USA.

(ii) There is no repository of a registered list of FM organisations that can facilitate the sampling and settings of data collection. This is reflected in the number of participants especially in Phase 1 questionnaire survey and Phase 2 case studies, which limits the scope of findings.

10.4 Recommendations

A summary of recommendations is proposed:

(i) FM Practice

- FM can be involved during the initial phase of building planning and design, where input from FM managers can help mitigate the risk of failure in design.
- FM employees need to have a thorough understanding of the service offerings, market and industry to ensure that they are able to comprehend detailed customer requirements, and translate these requirements into performance measurements

(ii) Organisational

- Higher organisational awareness of the needs of FM in the property industry is essential for FM development.
- Joint or collaborative involvement of the government plays an important role in instilling FM culture and awareness through the imposition of guidelines and research works, and providing assistance in complying with the requirements.
- Allocation of the monitoring units may need some adjustments and reshuffling of the existing services due to strategic roles and focus.

(iii) Industry

- The public and professional bodies should be exposed to the importance of FM as a strategic component in service delivery. To achieve this, better participation from the government is needed in enforcing standards and regulations. The clients themselves should be responsible for embedding the importance of FM into their strategic endeavours through conducting training and by adopting a PM framework.
- A change in the mindset is needed against the conservative and protective industry practice. Therefore, more proactive campaigns are needed to change the perception of the professionals involved in the construction and property markets.

(iv) Working Culture

- A paradigm shift is needed in leadership to cultivate a culture of positive and beneficial interaction between customers and staff.

(v) Development of Tools

- New innovative tool such as software application to measure performance can be developed to aid the measuring process by the FM team. The PERFM can serve as a ground in developing this innovative software application.

(vi) Research Studies

- Further research studies can be conducted in expanding the scopes of this research. There are opportunities in exploring various scopes of studies such as the concept of PM in other FM industries globally; performance measures for specific nature of business or category i.e education, manufacturing; the concept of PM in urban FM and also the productivity analysis based on the outcomes of the measured services.
- There is also an opportunity to conduct a specific study focusing on the testing of the developed PERFM. Further analysis and studies would be beneficial in positioning the tested PERFM in the academic and the Malaysian FM industry.

10.5 Contribution to Knowledge

10.5.1 Academic

- This research opens up new possibilities for academic research. Although the scope of PM is widely studied by researchers, the focus of PM in relation to FM service performance is still lacking in interest and coverage. The existing frameworks are mostly concerned with the general indicators of FM with less focus given to the performance formula or targets. It is fair to say that this study is a new knowledge discovery, where a review of the relevant literature has not found any evidence of the specific approach that this study takes.

- It also promotes future subject exploration where new research approaches, methods and concepts can be further developed based on the design of this study. Future researchers could adopt this research's approaches and concepts in constructing models or frameworks for FM service, which could also be in other specialisations, for instance sustainability approach, strategic FM organisation and other FM topics and focuses.

- The new underlying theories of PERFM also validate its suitability within the performance indicators, values and concepts. This research also draws together the existing concepts by investigating two different FM industries and shows the feasibility of comparison between these two concepts in developing PERFM. These theories and concept approaches are good examples of future subject exploration that can be embarked upon by researchers.

- This study also highlights an in-depth understanding of performance criteria that need to be emphasised in both research and practice. It gives a solid overview of the PM subject and approaches in FM practice, which serves as a good reference for other researchers.

10.5.2 Industry

- The development of PERFM proposes a set of performance measures that can be used on a daily basis to measure the FM service performance. It is anticipated to fill the gap of the non-existence of a framework or guidelines for FM practitioners in Malaysia. This PERFM would enable the FM practitioners to understand the FM service scopes better and the performance specifications and targets that should be achieved within their capacities. The concise set of performance indicators would be a good reference of what are being currently used by the more developed FM industries and suggested in the literature.

- PERFM is also anticipated to serve as a platform in bringing up the FM industry to a whole new level. In Malaysia, quality and performance have always been compromised in the FM service and the future of the FM

profession has been consistently underrated. The emergence of PERFM, assisted by government support, should be able to upgrade the level of quality and performance that should be aimed for in the industry. Previous cases of severe public building deteriorations are the evidence of the lack of emphasis in ensuring the quality level of the FM service for the public buildings in Malaysia.

- PERFM is a robust framework that has been developed by adopting appropriate concept and methodologies, which exhibit wide applicability and valid FM performance categorisations. This new contribution to the industry has demonstrated that this research has taken into account the current phenomena of the FM industry in Malaysia and has developed a solution based on established techniques and methods but with a different focus to suit the originality of the research objectives.

10.5.3 New knowledge

- It can be concluded that this research poses evidences that it has demonstrated a new theoretical concept of FM service in PERFM, which has never been established in the FM field, especially focusing on the Malaysian context. A set of publications based on this research is also the supporting evidence where the knowledge of this research has been affirmed in academia. The unique concept, techniques, methodologies and analyses also demonstrate how this research significantly contributes to the knowledge and also is original.

10.6 Research Summary

In conclusion, the research aim and objectives of this research have been successfully achieved through the series of research methods from the formulation of research questions, literature review, data collection, data analysis, interpretation and up to the writing up process. The adoption of qualitative method shapes the data collection techniques of all the three phases; qualitative questionnaire survey, case studies and interviews. The first pilot study questionnaire survey provides significant findings in understanding the current thinking of PM and FM in Malaysian context as well as to further support the need to focus on the PM approach in Malaysia due to the lack of FM culture and awareness in Malaysia. The case studies findings provide primary data of the performance measures being practised, and these were then matched with the key principles and elements from the literature review to be compiled in the PERFM. Further evaluation of PERFM in the form of interviews also proves that the FM key players believe that PERFM is able to enhance the FM service delivery in Malaysia. This is as PERFM is able to fill the gap of Malaysian industry in specific, where there is a lack of tool to measure the FM performance. This research has proven beneficial in providing a new dimension in seeing how PM can contribute to strategic FM delivery in Malaysia. PERFM can be a catalyst to a new paradigm of what is currently a traditional and conservative practice to a modern and measureable approach. It is highly suggested that the Malaysian FM industry can adopt the framework in their strategic FM practice. The uniqueness of PERFM in comparison to other PM models is that PERFM offers a holistic framework, which consists the imperative elements that constitute the management and operation of FM services. It is developed based on the study of the performance measures developed in the academic and practised in the industry. The aggregative levels of its performance measures signify the details being given on this, and the performance formula or target identify the established target or achievement level. Monitoring methods are proposed in order to facilitate the tracking of the measurement process. It is envisaged that PERFM will be able to contribute significantly by offering the value and benefits in aiding the measuring process to both in-house staff or outsourced service providers. This research also opens up opportunities for ample research areas in the future. Future research could focus on the strategic FM in Malaysia, strategic principles of PM, post-evaluation of PERFM practice, and customers' response to the services improved based on PERFM, among other topics.

REFERENCES

Ahmad, R., 2008. Role and Approach of Building Surveying in Facilities & Maintenance Management. In: *National Seminar on Facilities & Maintenance Management In the 21st Century*: *The Demands & Needs for Growth In Malaysian Building Industry*. Kuala Lumpur, 12 August 2008.

Alexander, K. 1996. *Facilities Management: Theory and Practice*. London: E & FN Spon.

Alexander, K. 1997. *Facilities Management*. London: E & FN Spon.

Alexander, K. 1999. *Facilities Management*. 2nd ed. London: E & FN Spon.

Alexander, K. 2002. *Facilities Management: creating the platform for business value*, unpublished paper.

Alexander, K. 2003. A strategy for facilities management. *Facilities*, 21(11/12), pp. 269-274.

Alexander , K. and Brown, M. 2006. Community-based facilities management. *Facilities*, 24(7/8), pp. 250-268.

Ali, A.S. 2009. Cost decision making in building maintenance practice in Malaysia. *Journal of Facilities Management*, 7(4), pp.298-306.

Ali, A.S., Kamaruzzaman, S.N., Sulaiman, R. and Peng, Y.C. 2010. Factors affecting housing maintenance cost in Malaysia. *Journal of Facilities Management*, 8(4), pp. 285-298.

Amaratunga, D. 2000. Assessment of Facilities Management Performance. *Property Management*, 18(4), pp. 258-266.

Amaratunga, D., Baldry, D. and Sarshar, M. 2000. Assessment of facilities management performance - what next? *Facilities*, 18(1), pp.65-75.

Amaratunga, D. and Baldry, D. 2000. Assessment of facilities management performance in higher education properties. *Facilities*, 18(7/8), pp. 293-301.

Amaratunga, D. and Baldry, D. 2002. Moving from performance measurement to performance management. *Facilities*, 20(5/6), pp. 217-223.

Amaratunga, D. and Baldry, D. 2003. A conceptual framework to measure facilities management performance. *Property Management*, 21(2), pp.171-189.

Anderson, K. and McAdam, R. 2004. A critique of benchmarking and performance measurement: lead or lag? *Benchmarking: An International Journal*, 11(5), pp. 465-483.

Andrews, R., Boyne, G. A., & Walker, R. M. 2006. Subjective and objective measures of organizational performance: An empirical exploration. In Boyne, G.A., Meier, K.J., O'Toole, L.J., and Walker, R.M., (Eds.). *Public service*

performance: Perspectives on measurement and management. Cambridge: Cambridge University Press, pp.14 -34.

Annies, A. 2007. Current issues and challenges in managing government's assets and facilities. In: *National Asset & Facilities Management (NAFAM) Convention*. Kuala Lumpur, 13 August 2007.

Argument, L., Harrison, D. and Wainwright, C. 1997. Manufacturing strategy within the SME sector. In: *13th National Conference of Manufacturing.* Glasgow: Glasgow Caledonian University, pp. 6-10.

Ariff, A.M. 2007. Current issues and challenges in managing government's assets and facilities. In: *National Asset and Facilities Management (NAFAM) Convention.* Kuala Lumpur, 13 August 2007.

Arnold, J. 1991. *Introduction to Materials Management.* Englewood Cliffs, NJ: Prentice-Hall.

Atkin, B. and Brooks, A. 2000. *Total Facilities Management*. Oxford: Blackwell Science Ltd.

Atkin, B. and Brooks, A. 2005. *Total Facilities Management*. 2nd ed. Oxford: Blackwell Publishing.

Atkin, B. and Brooks, A. 2006. *Total Facilities Management*. 3rd ed. Oxford: Blackwell Publishing.

Atkinson, A.A., Waterhouse, J.H., Wells, R.B. 1997. A Stakeholder Approach to Strategic Performance Measurement. *Sloan Management Review*, 38(3), pp.25-37.

Atkinson, H. and Brown, J.B. 2001. Rethinking performance measures: assessing progress in UK hotels. *International Journal of Contemporary Hospitality Management*, 13(3), pp. 128-135.

Augenbroe, G. and Park, C. 2005. Quantification methods of technical building performance. *Building Research and Information*, 33(2), pp. 159-172

Azzone, G., Masella, C. and Bartele, U. 1991. Design of performance measures for time-based companies. *International Journal of Operations & Production Management*. 11(3), pp.77-85.

Babbie, E. 1990. *Survey Research Methods*. Belmont, CA: Wadsworth Publishing.

Babbie, E. 2007. *The Practice of Social Research*.11th ed. Belmont, CA: Wadsworth Publishing.

Baharum, M.R. and Pitt, M. 2009. Determining a conceptual framework for green FM intellectual capital. *Journal of Facilities Management*, 7(4), pp. 267-282.

Baldwin, A., McCaffer, R. and Osman, I. 2001. Project performance in a contracting organisation: Analysis, evaluation and development. In: *CIB World Congress.* Willington, New Zealand, April 2001.

Ballesty, S. 2007. Best practices and success stories in asset and facility management. In: *National Asset & Facilities Management (NAFAM) Convention.* Kuala Lumpur, Malaysia, 13 August 2007.

Barret, P.S. 1995. *Facilities Management: Towards Best Practice*. Oxford: Blackwell Science.

Barret, P. 2000. Achieving strategic facilities management through strong relationships. *Facilities*, 18 (10/11/12), pp.421-426.

Barret, P. and Baldry, D. 2004. *Facilities Management: towards best practice*. London: Blackwell Publishing.

Becker, F. 1990. *The Total Workplace*. New York: Van Nostrand Reinhold.

Behn, R. D. 2003. Why Measure Performance? Different Purposes Require Different Measures. *Public Administration Review*, 63(5), pp. 586–606

Bell, J. 1992. Facilities management and changing professional boundaries. *Facilities*, 10(10), pp.161-173.

Bergman, M.M. 2010. On Concepts and Paradigms in Mixed Methods Research. *Journal of Mixed Methods Research*, 4(3), pp. 171-175.

Bernolak, I. 1997. Effective measurement and successful elements of company productivity: the basis of competitiveness and world prosperity. *International Journal of Production Economic*, 52 (1/2), pp. 203-213.

Best, R., Langston, C. and De Valence. 2003. Continuous Improvement. In: Best, R. Langston, C. and De Valence, G., (Eds.), *Workplace Strategies and Facilities Managements*. 1st ed. Burlington: Butterworth-Heinemann Publications, pp. 1-7.

Bierbusse, P. and Siesfeld, T. 1997. Measures that matter. Journal of Strategic Performance Measurement, 1(2), pp. 6-11.

Bititci, U.S. 1994. Measuring your way to profit. *Management Decision*, 32(6), pp.16-24.

Bititci, U., Carrie, A. and McDevitt, L. 1997. Integrated performance measurement systems: a development guide. *International Journal of Operations & Management.* (17(5), pp. 522-534.

Bohte, J. and Meier, K.J. 2000. Goal displacement: assessing the motivation for organisational cheating. *Public Administration Review*, 60(2), pp. 173-182.

Boyne, G.A., Meier, K.J., O'Toole, L.J. and Walker, R.M. (Eds.), 2006. *Public service performance: Perspectives on measurement and management*. Cambridge, UK: Cambridge University Press, pp. 1-12.

Bon, R., McMahan, J.F. and Carder, P. 1998. Property performance measurement: from theory to management practice. *Facilities*, 16(7/8), pp. 208-214.

Bourne, M., Mills, J., Wilcox, M., Neely, A.D. 2000. Designing, Implementing and Updating Performance Measurement Systems. *International Journal of Operations & Productions Management*, 20(7), pp. 754-771.

Bourne, M., Neely, A.D. 2003. Implementing Performance Measurement Systems: a literature review. *International Journal of Business Performance Management*, 5(1), pp.1-24.

Boyne, G.A. 2002. Concepts and indicators of local authority performance: An evaluation of the statutory framework in England and Wales. *Public Money and Management*, 22(4), pp. 17-24.

Boyne, G.A. 2003. What is public service improvement? *Public Administration*, 81(2), pp. 221-228.

Brackerts, N. and Kenley, R. 2002. Evaluating community facilities in local government: managing for service enablement. *Journal of Facility Management*, 1(3), pp. 283-299.

Brewer, G. 2006. All Measures of Performance are Subjective: More Evidence on US Federal Agencies. In Boyne, G.A., Meier, K.J., O'Toole, L.J. and Walker, R.M. (Eds.) *Public Service Performance: Perspectives on Measurement and Management*. Cambridge, UK: Cambridge University Press, PP.35-54.

Brewer, J. and Hunter, A. 1989. *Multimethod research: A Synthesis of Styles.* Newbury Park CA: Sage Publications.

British Institute of Facilities Management (BIFM). 2007. *Workbook 3: FM and FM Strategy*. West Midlands: BPP Learning Media.

British Institute of Facilities Management (BIFM). 2012. *Facilities Management Introduction [online].* Available at: <http://www.bifm.org.uk/bifm/about/facilities [Accessed on 12 April 2012.]

Brown, J. and Devlin, J. 1997. Performance Measurement – The ENAPS Approach. *The International Journal of Business Transformation*, 1(2), pp 73-84.

Brown, M.G, Hitchcock, D.E. and Willard M.L. 1994. Why TQM Fails? Burr Ridge, Illinois: Irwin Publishing.

Brown, M. 1996. *Keeping Score: Using the Right Metrics to Drive World Class Performance*. New York, NY: Quality Resources.

Bryman, A. 2006. Integrating Quantitative and Qualitative Research: how is it done? *Qualitative Research*, 6(1), pp.97-114.

Cable, J.H. and Davis, J.S. 2004. Key Performance Indicators for Federal Facilities Portfolios. *Federal Facilities Council Technical Report 147*. Washington, DC: National Academic Press.

Cain, C. T. 2004. *Performance Measurement for Construction Profitability*, Oxford, UK: Blackwell Publishing Ltd.

Campbell, J.D. 1995. *Uptime: Strategies for Excellence in Maintenance Management*. Cambridge, UK: Productivity Press.

Campbell, D.T., and Fiske, D.W. 1959. Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological Bulletin*, 56(2), pp.81-105.

Cardellino, P. and Finch, E. 2006. Evidence of systematic approaches to innovation in facilities management. *Journal of Facilities Management*, 4(3), pp.150-66.

Carder, P. 1997. Interface management: a fictional case study. *Facilities*, 15(5/6), pp. 142-149.

Charmaz, K. ed. 2006. *Constructing Grounded Theory: A Practical Guide Through Qualitative Analysis-Introducing Qualitative Methods*. London: Sage Publications.

Cheng, M.-I., Dainty, A. and Moore, D. 2007. Implementing a new performance management system within a project-based organization. *International Journal of Productivity and Performance Management*, 56(1), pp. 60-75.

Chotipanich, S. 2004. Positioning facility management. *Facilities*, 22(13/14), pp.364-372.

Consruction Industrial Development Board (CIDB) 2010. Newsletter [online], Malaysia: CIDB. Available at: <http://www.cidb.gov.my/v6/?q=en/content/533> [Accessed on 10 December 2010.]

Coetzee,J. L. 1998. *Maintenance*. Republic of South Africa: Maintenance Publishers.

Collier, P. 1995. *Improving business success through accurate performance measurement*. Worcester: Worcester College of Higher Education.

Cotts, D.G. 1998. *The Facility Management Handbook*. 2nd ed. New York, NY: Amacom Press.

Crawford, K. and Cox, J. 1990. Designing performance measurement systems for just in time operations. *International Journal of Production Research*, 28(11), pp. 2025-2036.

Creswell, J. W. 1994. *Research Design: Qualitative and Quantitative Approaches*. Thousand Oaks, CA: Sage Publications.

Creswell, J. 1998. *Qualitative inquiry and research design: Choosing among five traditions*. Thousand Oaks, CA: Sage Publications.

Creswell, J.W. and Clark, P. 2007. *Designing and conducting mixed method research*. Thousand Oaks, CA: Sage Publications.

Creswell, J.W. 2009. *Research Design: Qualitative, Quantitative, and Mixed Method Approaches*. 3rd ed. London: Sage Publications.

Croom, S., Romano, P. and Giannakis, M. 2000. Supply chain management: an analytical framework for critical literature review. *European Journal of Purchasing & Supply Management*, 6(1), pp. 67-83

Crotty, M. 1998. *The Foundations of Social Research: Meaning and Perspective in the Research Process*. London: Sage Publications.

Cupello, J.M. 1994. *A new paradigm for measuring TQM progress*. Quality Progress, 27(5), pp. 79-82.

Datta, L. 1994. Paradigm wars: A basis for peaceful coexistence and beyond. In Reichardt, C.S. & Rallis, S.F. (Eds.) *The qualitative-quantitative debate: New perspectives*. San Francisco: Jossey-Bass.

Denzin, N.K., Lincoln, Y.S. 2000. Introduction: The Discipline and Practice of Qualitative Research. In Denzin, N.K. and Lincoln, Y.S. (Eds.) Handbook of Qualitative Research. 2nd ed. Thousand Oaks, CA: Sage Publications, pp. 1-28.

Department of Trade Industry (DTI). 2003. *Competing in the global economy: the innovation challenge*. Economic Paper No.7. London: DTI.

De Toni, A. and Tonchia, S. 2001. Performance measurement systems. *International Journal of Operations & Production Management*, 21(1/2), pp. 46-70.

De Toni, A., Fornasier, A. Montagner, M. and Nonino, F. 2007. A performance measurement system for facility management: the case study of a medical service authority. *International Journal of Productivity and Performance Management*, 56(5/6), pp. 417-435.

Dixon, J.R., Nani, A.J., and Vollman, T.E. 1990. *The New Performance Challenge: Measuring Operations for World Class Competition*. Homewood, IL: Dow-Jones Irwin.

Dunican, E. 2005. A framework for evaluating qualitative research methods in computer programming education. In: *17th Workshop of the Psychology of Programming Interest Group*. Sussex University, June 2005.

Dwight, R.A. 1995. *Concepts of Measuring Maintenance Performance, New Developments in Maintenance*. Utrecht: Moret Ernst & Young Management Consultants, pp. 109-125.

Eccles, R. 1991. The performance measurement manifesto, *Harvard Business Review*, 69 (January-February), pp. 131-137.

Economic Planning Unit, 2006. *9th Malaysian Plan [pdf] Available at: <www.parlimen.gov.my/news/eng-ucapan_rmk9.pdf> [Accessed on 20 June 2011.]*

Egbu, C. 2008. Sustainability in Building Facilities & Maintenance: Skills, Knowledge and Personal Qualities for Managing Refurbishment Project. In: *National Seminar on Facilities & Maintenance Management In the 21st Century: The Demands & Needs for Growth In Malaysian Building Industry*. Kuala Lumpur, 12 August 2008.

Ellram, L.M. and Tate, W.L. and Billington, C. 2004. Understanding Service Supply Chain Management. *The Journal of Supply Chain Management*, 40(4), pp.17-32.

Enoma, A. and Allen, S. 2007. Developing key performance indicators for airport safety and security. *Facilities*, 25(7), pp. 296-315.

Fei, T.L.K. and Rainey, H.G. 2003. Total Quality Management in Malaysian Government Agencies Conditions for Successful Implementation of Organisational Change. *International Public Management Journal*, 6(2), pp. 145-172.

Finch, E. 2002. Automated information capture in performance measurement, *Journal of Facilities Management*, 1(2), pp. 188-95.

Fitzgerald, L., Johnson, R., Brignall, S., Silvestro, R. and Voss, C. 1991. *Performance Measurement in Service Businesses.* London: CIMA.

Fitzgerald, L. and Moon, P. 1996. *Performance Measurement in the Service Industries: Making it Work.* London: CIMA.

Flapper, S., Fortuin, L. and Stoop, P. 1996. Towards consistent performance management systems. *International Journal of Operations & Production Management*, 16(7), pp. 27-37.

Fong, P.S.W. and Dettwiler, P. 2009. Entrepreneurial firms and their knowledge creation: a study of real estate management. *Facilities*, 27(7/8), pp. 267-276.

Fortuin, L. 1988. Performance indicators – why, where and how? *European Journal of Operational Research*, 34(1), pp. 1-9.

Fowler, F.J. 2002. *Survey Research Methods: Applied Social Research Methods Series.* 3rd ed. California: Sage Publications.

Fry, T.D. 1995. Japanese manufacturing performance criteria*. International Journal of Production Research*, 33(4), pp. 933-954.

Ghalayini, A.M., Noble, J.S. and Crowe, T.C. 1997. An integrated dynamic performance measurement system for improving manufacturing competitiveness. *International Journal of Production Economics*, 48(3), pp. 207-225.

Gibbs, G. 2007. *Analyzing qualitative data- Book 6 of The Sage Qualitative Research Kit*. London: Sage Publications.

Globerson, S. 1985. Performance criteria and incentive system. *International Journal of Production Research*, 23(4), pp. 639-46.

Golden, B.R. 1992. Is the past the past - or is it? The use of retrospective account as indicators of past strategies. *Academy of Management Journal*, 35(4), pp. 848-860.

Goyal, S. and Pitt, M. 2006. *Determining the role of innovation management in facilities management*.In: School of Built Environment (SOBE) Postgraduate Conference. Liverpool John Moores University, Liverpool.

Goyal, S. 2007. *Determining the role of innovation management and measurement in strategic facilities management: ensuring optimisation and continuity*. PhD. Liverpool John Moores University.

Greatbanks, R. and Boaden, R. 1998. Can SMMEs afford to measure performance? *Performance Measurement-Theory and practice*. In: Conference Proceedings, Vol.1, Cambridge, UK: Cambridge University, pp 117-124.

Gregory, M. 1993. Integrated performance measurement: a review of current practice and emerging trends. *International Journal of Production Economics*, 30(31), pp.281-296.

Grimshaw, B. 1999. Facilities management: the wider implications of managing change. *Facilities*, 17(1/2), pp. 24-30.

Grossman, E. 1993. *How to measure company productivity: Handbook for Productivity Measurement and Improvement*. Cambridge, MA: Productivity Press.

Guba, E. G. 1990. *The paradigm dialog*. Beverly Hills, CA: Sage Publications.

Guba, E. G. and Lincoln, Y. S. 1994. Competing paradigms in qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.). *Handbook of qualitative research*. London: Sage Publications, pp. 105-117.

Guest, D.E., Michie, J., Conway, N. and Sheehan, M. 2003. Human resource management and corporate performance in the UK. *British Journal of Industrial Relations*. 41(2), pp. 291-314.

Gumbus, A. and Lyons, B. 2002. The balanced scorecard at Phillips Electronics. *Strategic Finance*, 84(5), pp.45-49.

Gumbus, A. 2005. Introducing the Balance Scorecard: Creating Metrics to Measure Performance. *Journal of Management Education*, 29(4), pp. 617-630

Gunasekaran, A., Patel, C. and Tirtiroglu, E. 2001. Performance measures and metrics in a supply chain environment. *International Journal of Operations & Production Management*, 21(1/2), pp. 71-87.

Haas, d. H., Hansen, A.P. 2010. Facilities Management In A Service Supply Chain Perspective. In: Arlbjørn, J.S. (Ed.) Logistics and Supply Chain Management in a Globalised Economy. *Proceedings of the 22nd Annual NOFOMA Conference*, University of Southern Denmark, 10-11 June 2010.

Hall, R.W. 1983) *Zero Inventories*. Dow-Jones Irwin, Homewood, IL: Dow-Jones Irwin.

Hall, R.W., Johnson, H.T. and Turney, P.B.B. 1991. *Measuring Up - Charting Pathways to Excellence*. Homewood, IL: Business One Irwin.

Hallam, S. 2000. In: Kamaruzzaman, S.N and Zawawi, E.M.A. 2010. Development of facilities management in Malaysia. *Journal of Facilities Management*, 8(1), pp.75-81

Haapasalo, H., Ingalsuo, K. and Lenkkeri, T. 2006. Linking strategy into operational management. *Benchmarking: An International Journal*, 13(6), pp. 701-717.

Hamid, A. 2007. Clinical Engineering in Malaysia - A Case Study. In: *IFMBE Proceedings MEDICON 2007:11th Mediterranean Conference on Medical and Biological Engineering and Computing*. Ljubljana, 26-30 June 2007.

Hansson, J., Backlund, F., Lycke, L. 2003. Managing commitment: Increasing the odds for successful implementation of TQM, TPM or RCM. *International Journal of Quality & Reliability Management*, 20(9), pp. 993-1008.

Harper, J. 1984. *Measuring Business Performance*. Institute of Manpower Studies: Gower Publishing.

Hassan, S. 2007. National asset and facility management development. In: *National Asset & Facilities Management (NAFAM) Convention.* Kuala Lumpur, Malaysia, 13 August 2007.

Hatry, H.P. 1978. The status of productivity measurement in the public sector. *Public Administration Review*, 38(1), pp. 28-33.

Hill, T. 1995. *Manufacturing Strategy: The Strategic Management of the Manufacturing Function*. 2nd ed. London: Open University, Macmillan.

Hinks, J. and McNay, P.1999. The creation of a management-by-variance tool for facilities management performance assessment. *Facilities*, 17(1/2), pp. 31-53.

Ho, D.C.W., Chan, E.H.W., Wong, N.Y. and Chan, M-W. 2000. Significant metrics for facilities management: benchmarking in the Asia-Pacific region. *Facilities*, Vol.18 no. 13/14, pp.545-556.

Hopwood, A.G. 1984. *Accounting and human behaviour*. Englewood Cliffs, NJ: Prentice-Hall.

House, C.H. and Price, R.L. 1991.The return map: tracking product teams. *Harvard Business Review*, (January-February), pp. 92-100.

Howe, K. 1988. Against the Quantitative-qualitative Incompatibility Thesis or Dogmas die Hard. *Educational Researcher*, 17(8), pp.10-16.

Hudson, M., Smart, A. and Bourne, M. 2001. Theory and practice in SME performance measurement systems. *International Journal of Operations & Production Management*, 21(8), pp. 1096-1115.

Husin, J.M. 2007. Technology utilization in managing government assets and facilties. In: *National Asset & Facilities Management (NAFAM) Convention.* Kuala Lumpur, Malaysia, 13 August 2007.

Inamdar, S.N., Kaplan, R.S., Helfrich, J.M.L. and Menitoff, R. 2000. The balanced scorecard: A strategic management system for multi-sector collaboration and strategy implementation. *Quality Management in Health Care*, 8(4), pp.21-39.

International Facility Management Association (IFMA). 2012. What is FM [online]. Available at: <http://www.ifma.org/what_is_fm/index.cfm>. [Accessed on 1 May 2012.]

Ismail, M. 2007. Developing a core competency-based career and development framework for facilities and asset managers. In: *National Asset & Facilities Management (NAFAM) Convention.* Kuala Lumpur, Malaysia, 13 August 2007.

Jackson, M. and Petersson, P. 1999. Productivity - an overall measure of competitiveness. In: *2nd Workshop on Intelligent Manufacturing Systems*. Leuven, Belgium, 22-24 September 2009.

Jensen, P.A. 2008. The origin and constitution of facilities management as an integrated corporate function. *Facilities*, 26(13/14), pp. 490-500.

Jensen, P.A. 2010. The Facilities Management Value Map: a conceptual framework. *Facilities*, 28(3/4), pp. 175-188.

Jick, T.D. 1979. Mixing qualitative and quantitative methods: Triangulation in action. *Administrative Science Quarterly*, 24(4), pp.602-611.

Johnson, H.T. and Kaplan, R.S. 1987. *Relevance Lost: The Rise and Fall of Management Accounting.* Boston Massachusetts: Harvard Business School.

Johnson, B., and Onwuegbuzie, A. 2006. Mixed method research: A research paradigm whose time has come. *Educational Researcher*, 33(7), pp. 14-26.

Jones, S., Buerkle, M., Hall, A., Rupp, L. and Matt, G. 1993. Work group performance measurement and feedback. *Group and Organisation Management Journal*, 18(3), pp. 269-91.

Jones, C.R. 1996. Customer satisfaction assessment for internal suppliers. *Managing Service Quality*, 6(1), pp.45-48.

Kadefors, A. 2008. Contracting in FM: collaboration, coordination and control. *Journal of Facilities Management*, 6(3), pp. 178-188.

Kagioglou, M., Cooper, R. and Aouad, G. 2001. Performance management in construction: a conceptual framework. *Construction Management & Economics*, 19(1), 85- 95.

Kamaruzzaman, S.N and Zawawi, E.M.A. 2010. Development of facilities management in Malaysia. *Journal of Facilities Management*, 8(1), pp.75-81.

Kamaruzzaman, S.N., Myeda, N.E. and Pitt, M. 2013. Performance levels of high-rise private office buildings maintenance management in Malaysia. *Eksploatacja i Niezawodnosc – Maintenance and Reliability*, 16(2), pp. 110-115.

Kaplan, R.S. 1983. Measuring manufacturing performance: a new challenge for managerial accounting research. *The Accounting Review*, 18(4), pp. 686-705.

Kaplan, R.S. 1984. The evolution of management accounting. *The Accounting Review*, 59(3), pp. 390-418.

Kaplan, R.S. and Norton, D.P. 1992. The Balanced Scorecard – Measures that drive Performance. *Harvard Business Review*, 70(1), pp. 71-79.

Kaplan, R. and Norton, D.P. 1993. Putting the balanced scorecard to work. *Harvard Business Review*, (September-October), pp. 34-147.

Kaplan, R.S. and Norton, D.P. 2001. Transforming The Balanced Scorecard From Performance Measurement To Strategic Management: Part I, *Accounting Horizons*, Vol. 15 No. 1.

Kaplan, R.S. and Norton, D.P. 2001. A CFO Interview: On Balance. *CFO*, (Feb), pp. 73-78.

Kaya, S., Heywood, C.A, Arge, K., Brawn, G. and Alexander, K. 2004. Raising facilities management's profile in organisations: developing a world-class framework. *Journal of Facilities Management*. 3(1), pp. 65-82.

Keegan, D.P., Eiler, R.G. and Jones, C.R. 1989. Are your performance measures obsolete? *Management Accounting*, 70(12), pp. 45-50.

Kennerley, M. and Neely, A. 2002. A framework of the factors affecting the evolution of Performance measurement systems. *International Journal of Operations and Production Management*, 22(11), pp.1222-1245.

Kennerley, M. and Neely, A. 2003. Measuring Performance in A Changing Business Environment. *International Journal of Operation & Production Management*, 23(2), pp. 213-229.

Kincaid, D. 1994. Measuring performance in facilities management. *Facilities*, 12(6), pp.17-20.

Kouzmin, A., Loffler, E., Klages, H. and Korac-Kakabadse, N. 1999. Benchmarking and performance measurement in public sectors. *International Journal of Public Sector Management*, 12(2), pp. 121-144.

Kvale, S. 2007. *Doing interviews*. London: Sage Publications

Ladrum, N.E., Howell, J.P. and Pari, L. 2000. Leadership for strategic change. *Leadership and Organisation Development Journal*, 21(3), pp.150- 156.

Laitinen, E.K. 1996. *Framework for Small Business Performance Measurement – Towards Integrated PM Systems*, Proceedings of the University of Vaasa. University of Vaasa, Vaasa, Finland, Research Series 210, 82 p.

Larsen, J.L., Elle, M., Hoffmann, B, and Munthe-Kaas, P. 2011. Urbanising facilities management: the challenges in a creative age. Facilities, 29(1/2), pp. 80-92.

Lavy, S., Garcia, J.A. and Dixit, M.K. 2010. Establishment of KPIs for facility performance measurement: review of literature. *Facilities*, 28(9/10), pp. 440-464.

Lea, R. and Parker, B. 1989. The JIT spiral of continuous improvement. *IMDS*, 4, pp. 10-13.

Leech, N.L. and Onwuegbuzie, A.J. 2009. A Typology of Mixed Methods Research Designs. *Quality and Quantitative*, 43(2), pp. 265-275.

Lehtonen, T. 2006. Collaborative relationships in facility services. *Leadership & Organization*, 27(6), pp.449-464.

Lemanski, T. and Overton, T. 2011, [online], An introduction to qualitative research. The Higher Education Academy- UK Physical Sciences Centre,". Available at: <http://www.heacademy.ac.uk/assets/ps/documents/primers/primers/qualitative_research.pdf>. [Accessed on 01 May 2013].

Lewy, C. P., and A. F. Mée. 1998. Balanced Scorecard: Implementing the Ten Commandments." *KPMG Consulting, Londres*.

Lincoln, Y. S., and Guba, E., G. 2000. Paradigmatic controversies, contradictions and emerging confluences. In: N. K. Denzin & Y. S. Lincoln. (Eds.) *Handbook of Qualitative Research*. 2nd ed. Thousand Oaks, CA: Sage Publications, Inc, pp. 163-188.

Lingle, J. H. and Schiemann, W. A. 1996. From balanced scorecard to strategy gauge. Is measurement worth it? *Management Review*, 85(3), pp. 56-62.

Liyanage, C. and Egbu, C. 2008. A performance management framework for healthcare facilities management. *Journal of Facilities Management*, 6(1), pp. 23-36.

Loosemore, M. and Hsin, Y.Y. 2001. Customer focused benchmarking for facilities management. *Facilities*, 19(13/14), pp. 464-475.

Lorch, R. 2000. Improving the communication of academic research to the construction industry. Construction research and innovation strategy panel CRISP. Available at: <http://ncrisp.steel-sci.org/Publications/9916frLo.pdf, [Accessed on: 18 May 2011.]

Lunn, S.D and Stephenson, P. 2000. The impact of tactical and strategic FM automation. *Facilities*, 18(7/8), pp.20-31.

Luu, T.V., Kim, S.Y., Cao, H.L. and Park, Y.M. 2008. Performance measurement of construction firms in developing countries. *Construction Management and economics*, 26(4), pp. 373-386.

Lynch, C. 1991. *Measure Up! – Yardsticks for Continuous Improvement*. Oxford: Wiley.

Lynch, R.L. and Cross K.F. 1991. *Measure Up - the Essential Guide to Measuring Business Performance*. London: Mandarin.

Mahmud, Z. 2008. *Handbook of Research Methodology: A Simplified Version*. Shah Alam: University Publication Centre (UPENA).

Malaysian Association of Facilities Management. 2012. MAFAM [online]. Available at: <http://www.mafm.org.my/index.php?option=com_content&task=view&id=15&Itemid=27> [Accessed on 18 July 2012.]

Marshall, C. and Rossman, G.B. 1995. *Designing Qualitative Research*. Thousand Oaks, CA: Sage Publications.

Martinez, V. 2005. *Performance measurement systems: mix effects*, [online]. Available at: <http://euram2005.wi.tum.de> [Accessed on 18 May 2011.]

Maskell, B. 1989. Performance measures for world-class manufacturing. *Management Accounting*, May, pp. 32-33.

Maskell, B. 1991. *Performance Measurement for World Class Manufacturing: A Model for American Companies*. Cambridge, MA: Productivity Press.

Massheder, K. and Finch, E. 1998. Benchmarking metrics used in UK facilities management. *Facilities*, 16(5/6), pp. 123-127.

McDougall, G. and Hinks, J. 2000). Identifying priority issues in facilities management benchmarking. *Facilities*, 18(10/11/12), pp. 427-434.

McLennan, P. 2000. Intellectual capital: future competitive advantage for facility management. *Facilities*, 18(3/4), pp.168-71.

McLennan, P. 2004. Service Operations Management As A Conceptual Framework for Facility Management. *Facilities*, 22(13/14), pp. 344-348.

McMann, P. and Nanni, A.J. 1994. Is your company really measuring performance? *Management Accounting*, 76(5), pp. 55-58.

Medori, D. and Steeple, D. 2000). A framework for auditing and enhancing performance measurement systems. *International Journal of Operations & Production Management*, 20(5), pp. 520-533.

Meekings, A. 1995. Unlocking the potential of performance measurement: a practical implementation guide. *Public Money and Management*, 15(4), pp. 5-12.

Meier, K.J. and Brudney, J.L. 2002. *Applied statistics for public administration.* Orlando: Haincourt College.

Meier, K.J. and O'Toole, L.J. 2003. Public management and educational performance: the impact of managerial networking. *Public Administration Review*, Vol. 63(6), pp. 689-699.

Meng, X., and Minogue, M. 2011. Performance measurement models in facility management: a comparative study. *Facilities*, 29(11/12), pp. 472-484

Merriam, S. B. 1988. *Case study research in education: A qualitative approach*. San Francisco, CA: Jossey-Bass.

Mertens, D.M. 1998. *Research methods in education and psychology: Integrating diversity with quantitative and qualitative approaches*. Thousand Oaks, CA: Sage Publications.

Mertens, D.M. 2003. Mixed methods and the politics of human research: The transformative-emancipatory perspective. In A. Tashakkori & C. Teddlie. (Eds.) *Handbook of mixed methods in social and behavioral research*. Thousand Oaks, CA: Sage Publications, pp. 135-164.

Mertens, D.M. 2011. Mixed Methods as Tools for Social Change. *Journal of Mixed Methods Research*, 5(3), pp. 195-197.

Meyer, C. 1994. How the right measures help teams excel. *Harvard Business Review*, 72(3), pp. 95-103.

Miles, M.B. & Huberman, A.M. 1994. Qualitative Data Analysis. 2nd ed. Thousand Oaks, CA: Sage Publications.

Miller D.C. 1991. *Handbook of research design and social measurement*. 5th ed. Newbury Park, CA: Sage Publications.

Miller, W.L. and Crabtree, B.F. 1994. Clinical Research. In: Denzin, N.K. and Lincoln, Y.S. (Eds.) *Handbook of Qualitative Research*. Thousand Oaks, CA: Sage Publications, pp. 340-35.

Mills, J., Platts, K. and Gregory, M. 1995. A framework for the design of manufacturing strategy processes. *International Journal of Operations & Production Management,* 15(4), pp. 17-49.

Miro-Bedos, J. and Girbal-Puig, A. 1991. Management of an intelligent building: the facilities manager and the building director. *Facilities*, 9(4), pp.13-18.

Mohd-Noor, M.N. and Pitt, M. 2009a. A Critical Review on Innovation in Facilities Management Service Delivery. *Facilities*, 27(5/6), pp. 211-228.

Mohd-Noor, M.N. and Pitt, M. 2009b. The Application of Supply Chain Management and Collaborative Innovation In The Delivery of Facilities Management. *Journal of Facilities Management*, 7(4), pp. 283-297.

Mohd-Tobi, S. U., Amaratunga, D. and Mohd-Noor, M.N. 2013. Social enterprise applications in an urban facilities management setting. *Facilities*, 31(5/6), pp. 238-254.

Moore, M. and Finch, E. 2004. Facilities Management in South East Asia. *Facilities*, 22(9/10), pp.259-270.

Morgan, D.L. 2007. Paradigms Lost and Pragmatism Regained. *Journal of Mixed Method Research*, 1(1), pp. 48-76

Morse, J. 1991. On the evaluation of qualitative proposals. *Qualitative Health Research*, 1(2), pp. 147-151.

Moss, Q. Z., Alho, J. and Alexander, K. 2007. Performance measurement action research. *Journal of Facilities Management*, 5(4), pp. 290-300.

Murthy, D.N.P., Atrens, A. and Eccleston, J.A. 2002. Strategic maintenance management. *Journal of Quality in Maintenance Engineering*, 8(4), pp. 287-305.

Mustaffa, S.A.H., Adnan, H. and Jusoff, K. 2008. Facilities management challenges and opportunity in the Malaysian property sector. *Journal of Sustainable Development*, 1(2), pp.79-85.

Myeda, N.E., Kamaruzzaman, S.N., Samad, Z. A. and Zawawi, E.M.A. 2009. Establishing the Key Factors in Measuring Maintenance Management Performance. In: *1st Regional Symposium on Sustainable Construction Material & Building Systems (SUCOMBS),* Kuala Lumpur. Malaysia, 12 October 2009.

Myeda, N.E., Kamaruzzaman, S.N. and Pitt, M. 2011a. Measuring the performance of office buildings maintenance management in Malaysia. *Journal of Facilities Management*, 9(3), pp.181 – 199.

Myeda, N.E.., Kamaruzzaman, S.N. and Pitt, M. 2011b. Assessing The Maintenance Aspect of Facilities Management through A Performance Measurement System: A Malaysian Case Study. *Elsevier Procedia Engineering: 2nd International Building Control Conference*, Vol. 20, pp. 329-338.

Myeda, N.E. 2012. The sphere of performance measurement in strategic facilities management. *Journal of Facilities Management*, 10(3).

Myeda, N.E. and Pitt, M. 2012. Understanding the performance measurement system for facilities management industry in Malaysia. In: Performance Manegement (*PMA) 2012 Conference: From Strategy to Delivery*. Cambridge, 11-13 July 2012.

Myeda, N.E. and Pitt, M. 2012. Facilities Management in Malaysia: Understanding the Development and Practice. *Facilities* (forthcoming).

Nani, A.J., Dixon, J.R. and Vollmann, T.E. 1990. Strategic control and performance measurement. *Journal of Cost Management*, 4(2) pp. 33-42.

Neely, A., Gregory, M. and Platts, K. 1995. Performance measurement system design: a literature review and research agenda. *International Journal of Operations & Production Management*, 15(4), pp.80-116.

Neely, A., Mills, J., Gregory, M., Richards, H., Platts, K. and Bourne, M. 1996. *Getting the Measure of Your Business*. Works Management, Cambridge.

Neely, A., Richards, H., Mills, J., Platts, K. and Bourne, M. 1997. Designing performance measures: a structured approach. *International Journal of Operations & Production Management*, 17(11), pp.1131 – 1152.

Neely, A. 1999. The performance measurement revolution: why now and what next?. *International Journal of Operations & Production Management*, 19(2), pp. 205-228.

Neely, A. 2002. *Business Performance Management Theory and Practice*. Cambridge, UK: Cambridge University Press,

Neely, A., Mills, J., Platts, K., Richards, H., Gregory, M., Bourne, M. and Kennerly, M. 2000. Performance measurement system design: developing and testing a process-based approach. *International Journal of Operations & Production Management*, 20(10), pp. 1119-1145.

Neely, A., Adams, C. and Kenerley, M. 2002. *The performance prism: the scorecard for measuring and managing business success*. London: Financial Times-Prentice Hall.

Neely, A., Marr, B., Roos, G., Pike, S., & Gupta, O. 2003. Towards the third generation of performance measurement. *Controlling*, 15(3/4), pp.129-135.

Neuman, W.L. 2000. *Social Research Methods: Qualitative and quantitative approaches.* 4th ed. Boston: Allyn & Bacon.

Newman, I. and Benz, C.R. 1998. *Qualitative-quantitative research methodology: Exploring the interactive continuum.* Carbondale: Southern Illinois University Press.

Nieto, M. and Perez, W. 2000. The development of the theories from the analysis of the organization: case studies by the patterns of behaviour. *Management Decision*, 38(10), pp.723-733.

Niven, P.R. 2002. *Balanced Scorecard Step-By-Step*. New York: Wiley.

Nutt, B. 1999. Linking FM practice and research. *Facilities*, 17(1/2), pp.11-17.

Nutt, B. 2000. Four competing futures for facility management. *Facilities*, 18(3/4), pp. 124-132.

Nutt, B. and McLennan, P. 2000. *Facility Management Risks and Opportunities.* Oxford: Blackwell Science Ltd.

Nutt, P.C., Backoff, R.W. and Hogan, M.F. 2000. Managing the paradoxes of strategic change. *Journal of Applied Management Studies*, 9(1), 5-31.

Oliver, L. and Palmer, E. 1998. An integrated model for infrastructural implementation of performance measurement. In: *Performance Measurement-Theory and Practice.* (Vol.2) Cambridge: Cambridge University, pp 695-702.

Olve, N., Roy, J. and Wetter, M. 1999. *Performance Drivers: A Practical Guide to Using the Balanced Scorecard.* Chichester: John Wiley & Sons.

Onwuegbuzie, A.J. and Leech, N.L. 2005. On becoming a Pragmatic Researcher: The Importance of combining quantitative and qualitative research methodologies. *International Journal of Social Research Methodology: Theory and Practice,* 8, pp. 375-387.

Pandey, S. K. and Moynihan, D. P. 2006. Bureaucratic Red Tape and Organizational Performance: testing the Moderating Role of Culture and Political Support. In Boyne, G.A., Meier, K.J., O'Toole, L.J. Jr., and Walker, R.M. (Eds.). *Public service performance: Perspectives on measurement and management.* Cambridge, UK: Cambridge University Press, pp.130 -151

Parasuraman, A. 2004. Assessing and improving service performance for maximum impact: insights from a two-decade-long research journey. *Performance Measurement & Metrics*, 5(2), pp. 45-52.

Parida, A. and Kumar, U. 2006. Maintenance Performance Measurement (MPM): Issues and Challenges. *Journal of Quality in Maintenance*, 12(3) pp.239-251.

Parker, C. 2000. Performance Measurement. *Work study*, 49(2), pp.63-66.

Pathirage C., Haigh, R., Amaratunga, D. and Baldry, D. 2008. Knowledge management practices in facilities organisations: a case study. *Journal of Facilities Management,* 6(1), pp.5-22.

Patton, J. 1982. *Practical evaluation.* Beverly Hills, CA: Sage Publications.

Patton, M. Q. 1990. *Qualitative Evaluation and Research Methods*. 2nd ed. Newbury Park, CA: Sage Publications.

Piaw, C.Y. 2006. *Asas Statistik Penyelidikan*. Malaysia: McGraw Hill Companies

Pillai, A.S., Joshi, A. and Rao, K.S. 2002. Performance measurement of R&D projects in a multi-project, concurrent engineering environment. *International Journal of Project Management*, 20(2), pp. 165-177.

Pillay, M.S. 2002. *Privatization of Hospital Support Services*. Berlin: Springer.

Pintelon, L. and Van Puyvelde, F. 1997. Maintenance performance reporting systems: some experiences. *Journal of Quality in Maintenance Engineering*, 3(1), pp. 4 – 15.

Pitt, M. and Hinks, J. 2001. Barriers to the operations of the facilities management. *Facilities*, 19 (7/8), pp. 304-347.

Pitt, M. 2005. Trends in shopping centre waste management. Facilities, 23(11/12), pp. 522-533.

Pitt, M. and Tucker, M. 2008. Performance measurement in facilities management: driving innovation? *Property Management*, 26(4), pp. 241-254.

Platts, K. 1990. *Manufacturing audit in the process of strategy formulation*. PhD. University of Cambridge.

Platts, K. 1994. Characteristics of methodologies for manufacturing strategy formulation. *Computer Integrated Manufacturing Systems*, 7(2), pp. 93-99.

Powers B.A. & Knapp T.R. 1990. *A Dictionary of Nursing Theory and Research*. Newbury Park: Sage Publications.

Price, I. 2002. Can FM evolve? If not, what future? *Journal of Facilities Management*, 1(1), pp. 56-69.

Price, I. 2003. Facilities management as an emerging discipline. In: Best, R. Langston, C. and De Valence, G. (Eds.) *Workplace Strategies and Facilities Managements.* 1st ed. Burlington: Butterworth-Heinemann Publications, pp. 30-48.

Public Works Department Annual Report. 2000. [online], Malaysia, PWD. Available at: <www.jkr.gov.my/jkr4/index.php?r=page/view&id=161>. [Accessed on 19 August 2010.]

Punniyamoorthy, M. and Murali, R. 2008. Balanced score for the balanced scorecard: a benchmarking tool. *Benchmarking: An International Journal*, Vol. 15(4), pp. 420-443.

Reichardt, C.S. and Rallis, S.F. 1994. *The Qualitative-Quantitative Debate: New Perspectives. New Directions for Program Evaluation (No. 61).* San Francisco: Jossey-Bas.

Roberts, P. 2004. FM: new urban and community alignments. *Facilities*, 22(13/14), pp. 349-352.

Rocco, T. S., Bliss, L. A. Gallagher, S., and Pérez-Prado, A. 2003. Taking the Next Step: Mixed Methods Taking the Next Step: Mixed Methods Research in Organizational Systems Research in Organizational Systems. *Information Technology, Learning, and Performance Journal*, 21(1), pp.19-29.

Rose, K.H. 1995. A performance measurement model. *Quality Progress*, 28(2), pp. 63-66.

Ross, S.A., Chambers, S. and Johnston, R. 1993. *Corporate Finance*. 3rd ed. Burr Ridge, IL: Irwin.

Rossman, G.B. and Wilson, B.L. 1985. Numbers and words: Combining qualitative and quantitative methods in a single large scale evaluation. *Evaluation Review*, 9(5), pp. 627-643.

Rouse, P. and Putterill, M. 2003. An integral framework for performance measurement. *Management Decision*, 41(8), pp. 791-805.

Rummler, G.A. and Brache, A.P. 1995. *Improving Performance: How to Manage the White Space on the Organisation Chart.* San Francisco: Jossey-Bass Publishers.

Ruslan, N. 2007. Campus facilities management experience. In: *National Asset & Facilities Management (NAFAM) Convention.* Kuala Lumpur, Malaysia, 13 August 2007.

Saad, G. H., and Siha, S. 2000. Managing quality: critical links and a contingency model. *International Journal of Operations & Production Management,* 20(10), pp. 1146-1164

Samad, S.A. 2007. Critical issues in managing government's assets & facilities in Malaysia. In: *National Asset & Facilities Management (NAFAM) Convention.* Kuala Lumpur, Malaysia, 13 August 2007.

Santos, A. 1999. in Amaratunga, D. and Baldry, D. 2003. A conceptual framework to measure facilities management performance. *Property Management*, 21(2), pp.171-189.

Sarshar, M. and Pitt, M. 2009. Adding value to clients: learning from four case-studies. *Facilities*, 27(9/10), pp.399-412.

Schneiderman, M.A. 1998. Measurement, the Bridge Between the Hard and Soft Sides. *Journal of Strategic Performance Measurement*, April/May, pp.14-21

Schmenner, R. and Vollmann, T. 1994. Performance measures: gaps, false alarms and the usual suspects. *International Journal of Operations & Production Management*, 14(12), pp.58-69.

Schwandt, T. 1989. Solutions to the paradigm controversy: Coping with uncertainty. *Journal of Contemporary Ethnography*, 17(4), pp. 379-407.

Schwandt, T. 1994. Constructivist, interpretivist approaches to human inquiry. In: N. K. Denzin, N.K. and Lincoln, Y. S. Lincoln (Eds.). *Handbook of qualitative research.* Thousand Oaks, CA: Sage Publications, pp. 118-137.

Scottish Government. 2005. Initial research report on the performance of Public Private Partnerships in Scotland. Scottish Government. Available at: <http://www.scotland.gov.uk/Publications/2005/05/05153704/37067>. [Accessed on 14 March 2011.]

Sharp, J.M., Irani, Z., Wyant, T. and Firth, N. 1997. TQM in maintenance to improve manufacturing performance. In: Portlamd International Conference on Management of Engineering Technology (PICMET) Conference, Portland, OH, 27-31 July 1997.

Sieber, S. D. 1973. The integration of fieldwork and survey methods. *American Journal of Sociology*, 78(6), pp.1335-1359.

Sieber, J.E. 1998. Planning Ethically Responsible Research: A Guide for Students. *Science and Engineering Ethics*, 4(1), pp.7-23.

Sinclair, D. and Zairi, M. 1995. Effective process management through performance measurement. *Business Process Re-engineering and Management Journal*, 19(1), pp.75-88.

Sinclair, D. and Zairi, M. 1996. Assessing the Effectiveness of Performance Measurement Systems: A Case Study. *Total Quality Management,* 7(4), pp. 367-78.

Sink, S. and Tuttle, T. 1989. *Planning and Measurement in your organisation of the future*. Norcross, GA: Industrial Engineering & Management Press.

Slack, N., Chambers, S., Harland, C., Harrison, A. and Johnston, R. 1998. *Operations Management*. London: Pitman Publishing.

Slack N., Chambers, S. and Johnston, R. 2001. *Operations Management.* 3rd ed. London: Pearson Education.

Slater, S.F., Olson, E.M. and Reddy, V.K. 1997. Strategy based performance measurement. *Business Horizons*, 40(4), pp. 37-44.

Smith, S. 2003. Defining Facilities. In Best, R. Langston, C. and De Valence, G. (Eds.) *Workplace Strategies and Facilities Managements*. 1st ed. Burlington: Butterworth-Heinemann Publications, pp. 11-27.

Smith, A. 1993. *Reliability-Centered Maintenance*. New York, NY: McGraw-Hill.

Stake, R. 1995. *The art of case research*. Thousand Oaks, CA: Sage Publications.

Strauss, A. and Corbin, J. 1990. *Basics of Qualitative Research-Grounded Theory Procedures and Techniques.* Newbury Park, CA: Sage Publications.

Suh, N. 1990. *The Principles of Design, Oxford Series on Advanced Manufacturing.* New York, NY: Oxford University Press.

Sumanth, D. 1994. Productivity Engineering and Management. Maidenhead: McGraw-Hill.

Synnestvedt, T. 2001. Debates over environmental information to stakeholders as a policy instrument. *Eco-Management and Auditing*, 8(3), pp. 165-178.

Tangen, S. 2002. *A theoretical foundation for productivity measurement and improvement of automatic assembly systems*. Licentiate thesis, The Royal Institute of Technology, Stockholm.

Tangen, S. 2003. An Overview of Frequently used Performance Measures. *Work Study*, 52(7), pp. 347-354.

Tashakkori, A. and Teddlie, C. 1998. *Mixed Methodology: Combining qualitative and quantitative approaches*. Thousand Oaks, CA: Sage Publications.

Tashakkori, A. & Teddlie, C. 2003. *Handbook of Mixed Methods in Social &. Behavioral Research.* Thousand Oaks, CA: Sage Publications.

Tashakkori, A. and Teddlie, C. 2008. *Introduction to Mixed Method and Mixed Model Studies in the Social and Behavioural Sciences.* Thousand Oaks, CA: Sage Publications.

Tay, L. and Ooi, J.T. 2001. Facilities management: a jack of all trades? *Facilities*, 19(10), pp. 357-362.

Teddlie, C. and Tashakkori, A. 2009. *Foundations of Mixed Method Research.* Thousand Oaks, CA: Sage Publications.

Then, D.S.S. 1999. An integrated resource management view of facilities management. *Facilities*, 17(12/13), pp.462-469.

Thomson, T. 1990. The essence of facilities management. *Facilities*, 8(8), pp. 8-12.

Tolman, A. and Parkkila T. 2009. FM Tools to ensure healthy performance based buildings. *Facilities*, 27(11/12), pp. 469-479.

Trader-Leigh, K. E. 2002. Case study: Identifying resistance in managing change. *Journal of Organizational Change Management,* 15(2), pp.138-155

Trinius, W. and Sjostrom, C. 2005. Service life planning and performance requirements. *Building Research & Information*, 33(2), pp. 173-181.

Tucker, M. and Smith, A. 2008. User perceptions in workplace productivity and strategic FM delivery. *Facilities,* 26(5/6), pp. 196-212.

Tucker, M. and Pitt, M. 2009a. Customer performance measurement in facilities management: a strategic approach. *International Journal of Productivity and Performance Management,* 58(5/6), pp. 407-422.

Tucker, M. and Pitt, M. 2009b. National standards of customer satisfaction in facilities management. *Facilities*, 27(13/14), pp. 497-514.

Tucker, M. and Pitt, M. 2010. Improving service provision through better management and measurement of customer satisfaction in facilities management. *Journal of Corporate Real Estate*, 12(4), pp. 220-233.

Valins, M.S. and Slater, D. 1996. *Future Care: New Directions in Planning Health and Care Environments*. Oxford: Blackwell Science.

Varcoe, B.J. 1993. Facilities performance: achieving value-for-money through performance measurement and benchmarking. *Property Management*, 11(4), pp. 301 – 307.

Varcoe, B.J. 1996. Facilities performance measurement. *Facilities*, 14(10/11), pp. 46-51.

Ventovuori, T., Lehtonen, T., Salonen, A. and Nenonen, S. 2007. A review and classification of academic research in facilities management. *Facilities*, 25(5/6), pp.227-237.

Voss, G.B. and Voss, Z.G. 2000. Strategic orientation and firm performance in an artistic environment. *Journal of Marketing*, 64(1), pp. 67-83.

Wall, T.B., Michie, J., Patterson, M., Wood, S.J., Sheehan, M., Clegg, C.W. and West, M. 2004. On the validity of subjective measures of company performance. *Personnel Psychology*, 57(1), pp. 95-118.

Webster, C. and Hung, L. 1994. Measuring Service Quality and Promoting Decentring. *The TQM Magazine*, 6(5), pp. 50-55.

Webster, E. 2007. *Property Performance Measurement [online]*. Available at :<http://www.ogc.gov.uk/high_performing_property_property_performance_measurement.asp>. [Accessed on 10 Jan 2009.]

Wegelius-Lehtonen, T. 2001. Performance measurement in construction logistics, *International Journal of Production Economics*, 69(1), pp. 107-116.

Weimer, D.L. and Gormley, W.T. 1999. *Organisational report cards.* Cambridge, MA: Harvard University Press.

White, G. 1996. A survey and taxonomy of strategy-related performance measures for manufacturing. *International Journal of Operations & Production Management,* 16(3), pp. 42-61.

Williams, B. 1993. What a performance! *Property Management*, 11(3), pp. 190-199.

Wordsworth, P. 2001. *Lee's building maintenance management*. 4th ed. Oxford: Blackwell Science Ltd.

Yang, H., Yeung, J.F.Y., Chan, A.P.C., Chiang, Y.H. and Chan, D.W.M. 2010. A critical review of performance measurement in construction. *Journal of Facilities Management*, 8(4), pp. 269-284.

Yin, R. K. 2003. *Case study research, design and methods*. 3rd ed. Newbury Park: Sage Publications.

Yiu C.Y. 2008. A conceptual link among facilities management, strategic management and project management. *Facilities*, 26(13/114), pp. 501-511.

Zahri, N.A.M. 2007. Utilisation of technologies in managing government's assets and facilities. In: *National Asset & Facilities Management (NAFAM) Convention.* Kuala Lumpur, Malaysia, 13 August 200

APPENDICES

APPENDIX A:
SAMPLE OF PILOT STUDY QUESTIONNAIRE SURVEY (PHASE 1)

QUESTIONNAIRE SURVEY: PARITICIPANT INFORMATION SHEET

Project Title: Understanding Facilities Management (FM) Industry in Malaysia

You are invited to join with UCL in taking part in this research study.

This research is being conducted as part of a PhD programme in Facilities Management (FM) at UCL. This research aims to develop a Performance Measurement (PM) framework that FM companies and other organisations can practically use in order to enhance their service delivery. The research is specifically designed to provide an understanding of your role, opinions and experience in the FM industry and also some information on your level of understanding of the FM and the implementation of PM in the FM services provided by your company.

This research survey is considered as voluntary based. This questionnaire survey contains a set of questions pertaining your involvement background in Facilities Management (FM) industry and also some information on your level of understanding in FM, FM services provided also the elements of Performance Measurement (PM) in the FM service delivery by your company. Therefore you will be asked to answer all the questions accordingly. Then, your answers will be interpreted by using the statistical software in this regard.

To complete this questionnaire survey, it will take approximately 20-25 minutes of your time. The duration for this survey is about 2 months. Thus, you have a time to complete this survey at your convenience within the duration stated.

There are no risks to you in taking part in the questionnaires. There are no risks involved with this research, because all information received from you will be kept confidentially in a protect storage device. In addition, your answers are of the general opinions and do not involve any of your organisation's business confidentialities. However, you will get the benefits from the summary of the recommendations from the findings that will be provided on a request basis.
Thank you for your time and co-operation.

Contact Details of Researcher

If you wish to receive a summary of the research findings once the study is complete or if you require any further information please contact the following:

Ms Nik Elyna Myeda Nik Mat

[redacted]

Email: [redacted]

Please answer all questions in Section A and B. Kindly tick/ type (/) for your chosen answers/ your level of agreement with the following statements:

SECTION A:
A1: FM PROFESSION AND ROLE
In this section, I am interested in your knowledge of FM and the practice of FM by your company

		Strongly Agree	***Agree***	***Neutral***	***Disagree***	***Strongly Disagree***
a)	The FM profession in this country is highly recognised by the government	☐	☐	☐	☐	☐
b)	Our FM role is highly recognised by clients generally	☐	☐	☐	☐	☐
c)	The public generally recognise our FM roles and functions	☐	☐	☐	☐	☐
d)	Our FM personnel are highly qualified and professionally trained with balance knowledge and skill requirements	☐	☐	☐	☐	☐
e)	Our FM service is highly dependent on traditional management methods compared to having an integrated FM	☐	☐	☐	☐	☐
f)	We always keep up with the FM progress and developments locally and globally	☐	☐	☐	☐	☐
g)	FM industry in this country is still immature and is not adaptive to to the global development	☐	☐	☐	☐	☐
h)	IT system is fully implemented in our FM management system and helps to enhance our service delivery	☐	☐	☐	☐	☐

A2: STRATEGIC FM
In this section, Strategic FM refers to a strategic approach taken in managing and delivering the FM services

a) Does your company have any FM strategies? ☐ Yes [Proceed (b)] ☐ No [Proceed to (f)]

b) How long has your FM company practised the FM Strategies? ☐ <1 year ☐ 1-2 years ☐ 3-5 years ☐ >5 years

c) Do the FM Strategies integrate with your client's Corporate Objectives/ Strategies? ☐ Yes ☐ No ☐ Not sure

d) Do the FM strategies contribute to the success of their client's corporate missions? ☐ Yes ☐ No ☐ Not sure

e) Do you agree that the FM Strategies help to enhance your FM service delivery?

☐ Yes If yes, *How?* ……...
……

☐ No If No, *Why?* ……...
……

f) What do you think are the potential barriers to implementing FM Strategies? (You may have more than 1 answer)

- ☐ Senior management resistance
- ☐ Complicated decision making processes
- ☐ High stakeholders' interests and involvement
- ☐ Unacknowledged position of FM in organisation
- ☐ Organisation culture, beliefs and values
- ☐ Disorganised organisational structure
- ☐ Lack of strategic planning In organisation
- ☐ Other: *(Please specify)* ……..

g) Rank (1-4: Highest-Lowest) the factors that influence FM Strategies.

- ☐ External (e.g: economic, political, market) and internal
- ☐ Internal condition (e.g. facility/ buildings, status of FM, financial)
- ☐ Success of current strategies
- ☐ Direction of core business
- ☐ Development of property and premises policy (e.g. location,
- ☐ Property type, space requirements, image, IT)

h) Level of FM service practiced:

☐ Operational FM [Proceed to Section A3] ☐ Strategic FM [Proceed to i]

		Strongly Agree	***Agree***	***Neutral***	***Disagree***	***Strongly Disagree***
i)	Strategic FM improves our service quality	☐	☐	☐	☐	☐
j)	Strategic FM helps to prioritise FM needs	☐	☐	☐	☐	☐
k)	My company adheres to Strategic FM standards/ guidelines when practising FM	☐	☐	☐	☐	☐

A3: FM AND CORPORATE OBJECTIVES

Corporate objectives refer to the objectives and aims set by the clients for the organisation.

		Strongly Agree	***Agree***	***Neutral***	***Disagree***	***Strongly Disagree***
a)	FM is highly prioritised in my client's company budget	☐	☐	☐	☐	☐
b)	FM is included in my client's corporate Objectives	☐	☐	☐	☐	☐
c)	FM contribution to the business largely depends on the position of FM in an organisation hierarchy	☐	☐	☐	☐	☐
d)	Our clients understand the importance of FM strategies in reducing the overall cost	☐	☐	☐	☐	☐
e)	Facilities should be strategically planned and aligned to business needs	☐	☐	☐	☐	☐
f)	There is an increasing recognition of FM's contribution to the overall business performance	☐	☐	☐	☐	☐

A4: PERFORMANCE MEASUREMENT SYSTEM (PMS) IN FM
PMS in this scope refers to a system implemented to analyse the performance of the FM service

a) Does your company implement any Performance Measurement System (PMS) for FM? ☐ Yes [Proceed to A4 (c)] ☐ No [Proceed to A4 (b)]

b) Please state the top 3 reasons of why a PMS is not being implemented?
i)
ii)
iii)

[Proceed to 4(h)]

		Strongly Agree	***Agree***	***Neutral***	***Disagree***	***Strongly Disagree***
c)	Our PMS is in line with our client's corporate objectives	☐	☐	☐	☐	☐
d)	Our PMS is designed based on the FM strategies	☐	☐	☐	☐	☐
e)	Our FM performance has improved since the implementation of the PMS	☐	☐	☐	☐	☐
f)	The PMS serves as an effective tool to communicate with the facilities users	☐	☐	☐	☐	☐
g)	Performance indicators should be derived from a set of formulated FM Strategies	☐	☐	☐	☐	☐

h) Select the following factors that you believe were/ would be the barriers of implementing PMS in FM services:

Elements		*Factors*
(1) Management	☐	Unclear of objectives and benefits
	☐	Inadequate training and support
	☐	Manager's resistance
	☐	Lack of senior management commitment
	☐	Organisational fears
(2) Employee	☐	Employee resistance to change
	☐	Staff turnover and problems in reallocating new roles
	☐	Reluctant to invest time and energy
	☐	Lack of clarity/rationale
	☐	Employee fear of status affected or stressful work conditions
(3) Formulation of Measures	☐	No proper sample or guidance
	☐	Problems identifying suitable measures
	☐	Difficulties in evaluating the relative importance of measures
	☐	Striving for perfection
	☐	Unclear of the process and procedure involved
(4) Service Direction	☐	More focused on short-term decision-making
	☐	Rely on software as solution
	☐	Lack of strategic planning skill
	☐	Lack of awareness and understanding on the importance of PM
	☐	Priorities in other management aspects

Please suggest other factors if you have any:

……
……
……

SECTION B: BACKGROUND INFORMATION
Please answer the following questions pertaining your employment and the company's background

a) Country you are currently residing (*Please specify*) : ……

b) Gender type: ☐ Male ☐ Female

c) Age: ☐ 25 and under ☐ 26 - 35 ☐ 36 - 45 ☐ 46-55 ☐ >55

d) Business Activity: ☐ Manufacturing ☐ Construction ☐ Commercial ☐ Services

☐ Other (Please specify)_____

e) No of employees: ☐ Large (>500) ☐ Medium (<250) ☐ Small (<50)

f) Position in Organisation: ☐ Director level ☐ Senior Manager ☐ Middle manager ☐ Below

g) Job Type: ☐ FM Manager ☐ FM Assistant Manager ☐ FM Executives ☐ Other: (Please specify) _____

h) Involvement in FM: ☐ <1 year ☐ 1-2 years ☐ 3-5 years ☐ >5 years

THANK YOU FOR YOUR TIME TO COMPLETE THE QUESTIONNAIRE

APPENDIX B:
SAMPLE OF CASE STUDIES DATA COLLECTION (PHASE 2)

CASE STUDIES DATA COLLECTION: PARTICIPANT INFORMATION SHEET

Project Title: The Development Of A Performance Measurement Framework to enhance FM Service Delivery in Malaysia

Your company is invited to take part in the above mentioned research study. However, before you decide it is important that you understand why the research is being undertaken and what it involves. Please take time to read the following information. You are free to ask if there is anything unclear or if you would like more information. Please consider whether your company would like to take part in this research.

This research is being conducted by me (Mrs Nik Elyna Myeda Nik Mat) as part of my dissertation for the award of PhD in Facilities Management at University College London (UCL). This research aim is to develop a Performance Measurement (PM) framework that FM companies in Malaysia can practically use in order to enhance their existing service delivery. In order to achieve the aim, the objectives are:

- To understand the elements of effective PM both in theory and practice, looking at Malaysian and UK case studies.
- To develop a PM framework to be used by Malaysian FM practitioners
- To evaluate the framework ability to enable FM practitioners in Malaysia to enhance their existing FM service delivery

The methodology that will be adopted at this phase is case study method. This approach would require your co-operation in providing information pertaining the background of the FM service provided, PM approach adopted, performance indicators used to monitor the performance of FM service delivery to both in-house FM team or service providers, formulation of performance indicators, monitoring method and also the quality assessment approach adopted. The structure of the case study data required is attached.

This duration of the data collection would be 3-4 weeks and can be arranged at your convenient time. The methods of data collection would include interview with FM manager, observation, access to documents pertaining the subject area and also a follow-up towards the end of the data collection phase.

There are no risks to your company in taking part in this case study and it does not involve any of your organisation's business confidentialities. You may also request for a summary of the research study involving your company data for clarification purposes.

Thank you for your time and co-operation.

Contact Details of Researcher

If you wish to receive a summary of the research findings once the study is complete or if you require any further information please contact the following:

Ms Nik Elyna Myeda Nik Mat

[redacted]

Email: [redacted]

STRUCTURE OF CASE STUDIES DATA COLLECTION

Section A

---

1. Background of the organisation
2. Procurement method
3. Position of FM in the corporate organisation
4. FM service scopes- management and operation service aspects

Section B

---

1. PM approach
2. PMS system
3. Performance indicators used
4. Elements of PM indicators:
    - ✓ Purposes
    - ✓ Principles
    - ✓ Formulation of measurement
    - ✓ Implementation
    - ✓ Performance target
    - ✓ Performance formula
    - ✓ Performance tolerance
5. Monitoring methods
6. Linked to organisation/ corporate objectives or mission
7. Quality assessment
8. Reporting method

The proposed methods to obtain the above data are by studying both FM and PM systems implemented through the provision of documents, reports, archival records, interview and observation.

A follow-up is anticipated towards the completion of data collection.

APPENDIX C:
SAMPLE OF INTERVIEW QUESTIONS (PHASE 3)

INTERVIEWS: PARTICIPANT INFORMATION SHEET

Project Title: The Development Of A Performance Measurement Framework to enhance FM Service Delivery in Malaysia

You are invited to take part in the above mentioned research study. However, before you decide it is important that you understand why the research is being undertaken and what it involves. Please take time to read the following information. You are free to ask if there is anything unclear or if you would like more information. Please consider whether your company would like to take part in this research.

As you were previously involved in the earlier phase of data collection and are familiar with this research study, I would appreciate if you could give feedback to the proposed Performance Measurement Framework (PERFM). At this level, the aim is to evaluate the PERFM's ability to enable FM practitioners in Malaysia to enhance their existing FM service delivery.The evaluation will be based on a few elements namely design of framework, functionality, and implementation.

This duration of this interview would be around 50-60 minutes and can be arranged at your convenient time.

There are no risks to you in taking part in the interview. There are no risks involved with this research, because all information received from you will be kept confidentially in a protect storage device. In addition, your answers are of the general opinions and do not involve any of your organisation's business confidentialities. However, you will get the benefits from the summary of the recommendations from the findings that will be provided on a request basis.
Thank you for your time and co-operation.

Contact Details of Researcher

If you wish to receive a summary of the research findings once the study is complete or if you require any further information please contact the following:

Ms Nik Elyna Myeda Nik Mat
Bartlett School of Graduate Studies
University College London
1 – 19 Torrington Place
London WC1E 7HB

Email: elyna.nik.10@ucl.ac.uk

LEVEL 3 DATA COLLECTION

INTERVIEW QUESTIONS FOR FM MANAGERS

1. What do you think of the overall structure and layout of PERFM?

2. What do you think of the content elaboration of PERFM?

3. What do you think of the underlying principles and approach of PERFM? What principles/approaches do you see?

4. What do you think of the scope of PERFM?

5. Can you suggest how do you perceive PERFM's functionality by giving comments on the following aspects:

    (a) Flexibility
    (b) Productivity
    (c) Quality
    (d) Delivery
    (e) Cost Control

6. In terms of the implementation of PERFM, do you have any comment on the project management of this framework?

7. Do you believe that there is a potential demand of PERFM in Malaysian FM industry?

8. Do you anticipate any potential challenges in implementing PERFM? Could you please suggest them?

9. Do you have any suggestions or recommendations for PERFM?

10. Are there any other comment you would like to add?

APPENDIX D:
SAMPLE OF SPSS ANALYSIS

Example of SPPS Analysis Samples (selected statistics)

[Sample: Scale: All Variables]

Case Processing Summary

		N	%
Cases	Valid	35	100.0
	Excluded[a]	0	.0
	Total	35	100.0

[Sample: Reliability Test]

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.597	.618	38

[Sample: Background of Participants]

What is your gender?

		Frequency	Percent	Cumulative Percent
Valid	1	19	54.3	54.3
	2	16	45.7	100.0
	Total	35	100.0	

Age group

		Frequency	Percent	Cumulative Percent
Valid	25 and under	5	14.3	14.3
	26-35	22	62.9	77.1
	36-45	5	14.3	91.4
	46-55	3	8.6	100.0
	Total	35	100.0	

What is your job position?

		Frequency	Percent	Cumulative Percent
Valid	FM Manager	10	28.6	28.6
	FM Assistant Manager	4	11.4	40.0
	FM Executive	21	60.0	100.0
	Total	35	100.0	

What is the size of your company? (No of employees)

		Frequency	Percent	Cumulative Percent
Valid	More than 250	17	48.6	48.6
	50-250	14	40.0	88.6
	Less than 50	4	11.4	100.0
	Total	35	100.0	

How long have you been involved in FM industry?

		Frequency	Percent	Cumulative Percent
Valid	More than 5 years	10	28.6	28.6
	3-5 years	15	42.9	71.4
	1-2 years	7	20.0	91.4
	Less than 1 year	3	8.6	100.0
	Total	35	100.0	

[Sample: FM Role & Profession]

The FM profession in this country is highly recognised by the government

		Frequency	Percent	Cumulative Percent
Valid	Strongly Disagree	3	8.6	8.6
	Disagree	20	57.1	65.7
	Neutral	9	25.7	91.4
	Agree	2	5.7	97.1
	Strongly Agree	1	2.9	100.0
	Total	35	100.0	

All our FM personnel are highly qualified and professionally trained to balance knowledge and skills requirement

		Frequency	Percent	Cumulative Percent
Valid	Strongly Disagree	3	8.6	8.6
	Disagree	7	20.0	28.6
	Neutral	16	45.7	74.3
	Agree	8	22.9	97.1
	Strongly Agree	1	2.9	100.0
	Total	35	100.0	

The public generally recognise our FM roles and functions

		Frequency	Percent	Cumulative Percent
Valid	Strongly Disagree	4	11.4	11.4
	Disagree	22	62.9	74.3
	Neutral	5	14.3	88.6
	Agree	2	5.7	94.3
	Strongly Agree	2	5.7	100.0
	Total	35	100.0	

Our FM role is highly recognised by clients generally

		Frequency	Percent	Cumulative Percent
Valid	Disagree	1	2.9	2.9
	Neutral	15	42.9	45.7
	Agree	17	48.6	94.3
	Strongly Agree	2	5.7	100.0
	Total	35	100.0	

Our FM service is highly dependent on traditional management methods compared to having an integrated FM system

		Frequency	Percent	Cumulative Percent
Valid	Strongly Disagree	3	8.6	8.6
	Disagree	1	2.8	11.4
	Neutral	3	8.6	20.0
	Agree	24	68.6	88.6
	Strongly Agree	4	11.4	100.0
	Total	35	100.0	

We always keep up with the FM progress and developments locally and globally

		Frequency	Percent	Cumulative Percent
Valid	Strongly Disagree	5	14.3	14.3
	Disagree	12	34.3	48.6
	Neutral	7	20.0	68.6
	Agree	8	22.9	91.4
	Strongly Agree	3	8.6	100.0
	Total	35	100.0	

FM industry in this country is still immature and is not adaptive to the global development

		Frequency	Percent	Cumulative Percent
Valid	Strongly Disagree	1	2.9	2.9
	Disagree	4	11.4	14.3
	Neutral	5	14.3	28.6
	Agree	16	45.7	74.3
	Strongly Agree	9	25.7	100.0
	Total	35	100.0	

IT system is fully implemented in our FM management system and helps to enhance our service delivery

		Frequency	Percent	Cumulative Percent
Valid	Disagree	2	5.7	5.7
	Neutral	8	22.9	28.6
	Agree	16	45.7	74.3
	Strongly Agree	9	25.7	100.0
	Total	35	100.0	

[Sample: Strategic FM]

Does your company have any FM strategies?

		Frequency	Percent	Cumulative Percent
Valid	Yes	16	45.7	45.7
	No	17	48.6	94.3
	Not Sure	2	5.7	100.0
	Total	35	100.0	

How long has your FM company practised the FM Strategies? (N=16)

		Frequency	Percent	Cumulative Percent
Valid	More than 5 years	8	50.0	50.0
	3-5 years	4	25.0	75.0
	1-2 years	4	25.0	100.0
	Total	16	100.0	

Do the FM Strategies integrate with your client's Corporate Objectives/ Strategies?

		Frequency	Percent	Cumulative Percent
Valid	Yes	13	37.1	37.1
	No	2	5.7	42.9
	Not Sure	1	2.9	45.7
	N/A	19	54.3	100.0
	Total	35	100.0	

Do you agree that the FM Strategies help to enhance your FM service delivery?

		Frequency	Percent	Cumulative Percent
Valid	Yes	16	100.0	100.0
	Total	16	100.0	

FM Strategies contribute to the success of our client's corporate missions

		Frequency	Percent	Cumulative Percent
Valid	Neutral	1	6.3	6.3
	Agree	6	37.5	43.8
	Strongly Agree	9	56.2	100.0
	Total	16	100.0	

Which level of FM is being practised by your company?

		Frequency	Percent	Cumulative Percent
Valid	Operational Level	22	62.9	62.9
	Strategic Level	13	37.1	100.0
	Total	35	100.0	

Strategic FM improves our service quality (For Strategic Level , N=13)

		Frequency	Percent	Cumulative Percent
Valid	Agree	9	69.2	69.2
	Strongly Agree	4	30.8	100.0
	Total	13	100.0	

Strategic FM helps to prioritise our FM needs

		Frequency	Percent	Cumulative Percent
Valid	Agree	5	38.5	38.5
	Strongly Agree	8	61.5	100.0
	Total	35	100.0	

My company adheres to Strategic FM standards/ guidelines (i.e RICS/BIFM) when practising FM

		Frequency	Percent	Cumulative Percent
Valid	Disagree	8	61.5	61.5
	Neutral	3	23.1	84.6
	Agree	2	15.4	100.0
	Total	13	100.0	

Rank (1-4: Highest-Lowest) the factors that influence FM Strategies

Statistics

		External Condition	Internal Condition	Success of current strategies	Direction of core business	Development of property and premises policy
N	Valid	35	35	35	35	35
	Missing	0	0	0	0	0
Mean		3.46	2.80	2.94	2.74	3.06
Std. Deviation		1.597	1.208	1.235	1.291	1.662

Frequency Table: External Condition (1:Highest, 5: Lowest)

		Frequency	Percent	Cumulative Percent
Valid	Highest	8	22.9	22.9
	High	2	5.7	28.6
	Moderate	4	11.4	40.0
	Low	8	22.9	62.9
	Lowest	13	37.1	100.0
	Total	35	100.0	

Frequency Table: Internal Condition (1:Highest, 5: Lowest)

		Frequency	Percent	Cumulative Percent
Valid	Highest	7	20.0	20.0
	High	6	17.1	37.1
	Moderate	11	31.4	68.6
	Low	9	25.7	94.3
	Lowest	2	5.7	100.0
	Total	35	100.0	

Frequency Table: Success of current strategies (1:Highest, 5: Lowest)

		Frequency	Percent	Cumulative Percent
Valid	Highest	5	14.3	14.3
	High	8	22.9	37.1
	Moderate	10	28.6	65.7
	Low	8	22.9	88.6
	Lowest	4	11.4	100.0
	Total	35	100.0	

Frequency Table: Direction of core business (1:Highest, 5: Lowest)

		Frequency	Percent	Cumulative Percent
Valid	Highest	7	20.0	20.0
	High	9	25.7	45.7
	Moderate	9	25.7	71.4
	Low	6	17.1	88.6
	Lowest	4	11.4	100.0
	Total	35	100.0	

Frequency Table: Development of property and premises policy (1:Highest, 5: Lowest)

		Frequency	Percent	Cumulative Percent
Valid	Highest	8	22.9	22.9
	High	10	28.6	51.4
	Moderate	1	2.9	54.3
	Low	4	11.4	65.7
	Lowest	12	34.3	100.0
	Total	35	100.0	

What do you think are the potential barriers to implementing FM Strategies? (You may answer more than 1)

Statistics

		Senior management resistance	Complicated decision making processes	High stakeholders' interests and involvement	Unacknowledged position of FM in organisation	Organisational culture, beliefs and values
N	Valid	35	35	35	35	35
	Missing	0	0	0	0	0

Statistics

		Disorganised organisational structure	Lack of strategic planning in organisation	Other	Free text
N	Valid	35	35	35	35
	Missing	0	0	0	0

[Sample: Performance Measurement System (PMS) in FM]

(Based on N=14, companies that implement PMS)
Our PMS is designed based on the FM strategies

		Frequency	Percent	Cumulative Percent
Valid	Disagree	1	7.1	7.1
	Neutral	4	28.6	35.7
	Agree	6	42.9	78.6
	Strongly Agree	3	21.4	100.0
	Total	14	100.0	

Our PMS is in line with the client's corporate objectives

		Frequency	Percent	Cumulative Percent
Valid	Disagree	1	7.1	7.1
	Neutral	7	50.0	57.1
	Agree	5	35.8	92.9
	Strongly Agree	1	7.1	100.0
	Total	14	100.0	

Our FM performance has improved since the implementation of the PMS

		Frequency	Percent	Cumulative Percent
Valid	Neutral	5	35.7	35.7
	Agree	6	42.9	78.6
	Strongly Agree	3	21.4	100.0
	Total	14	100.0	

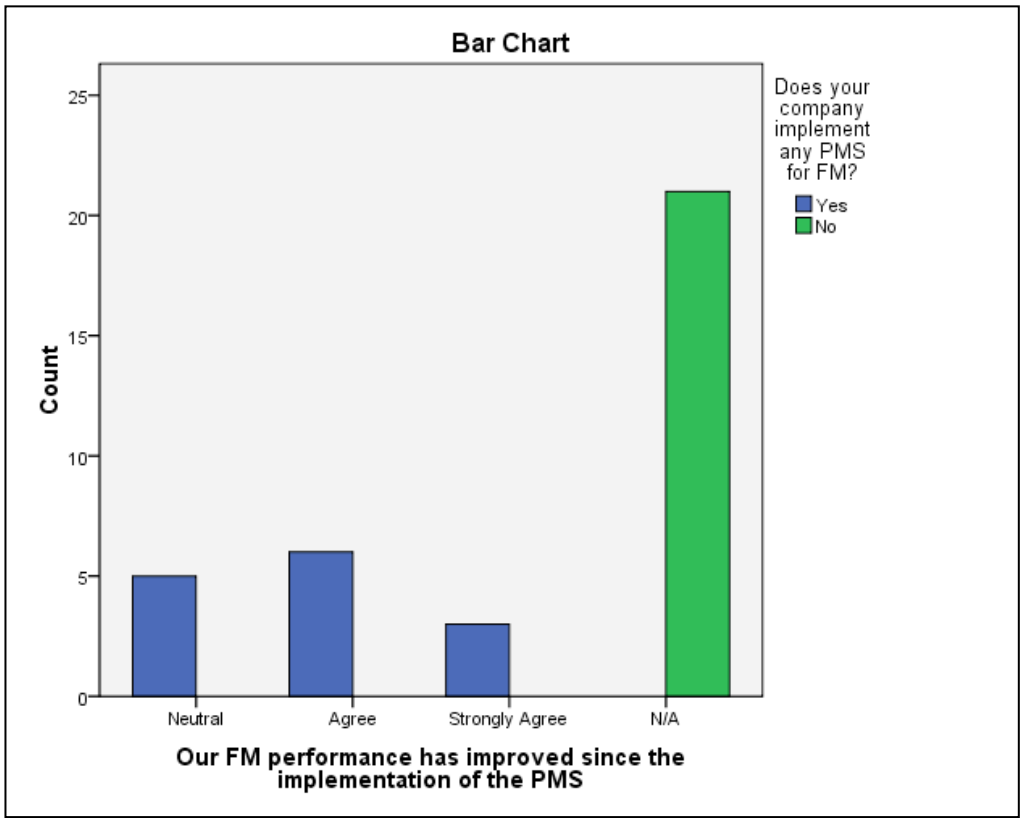
[Sample: Analysis on companies that implement PMS]

Cross tabulation between :

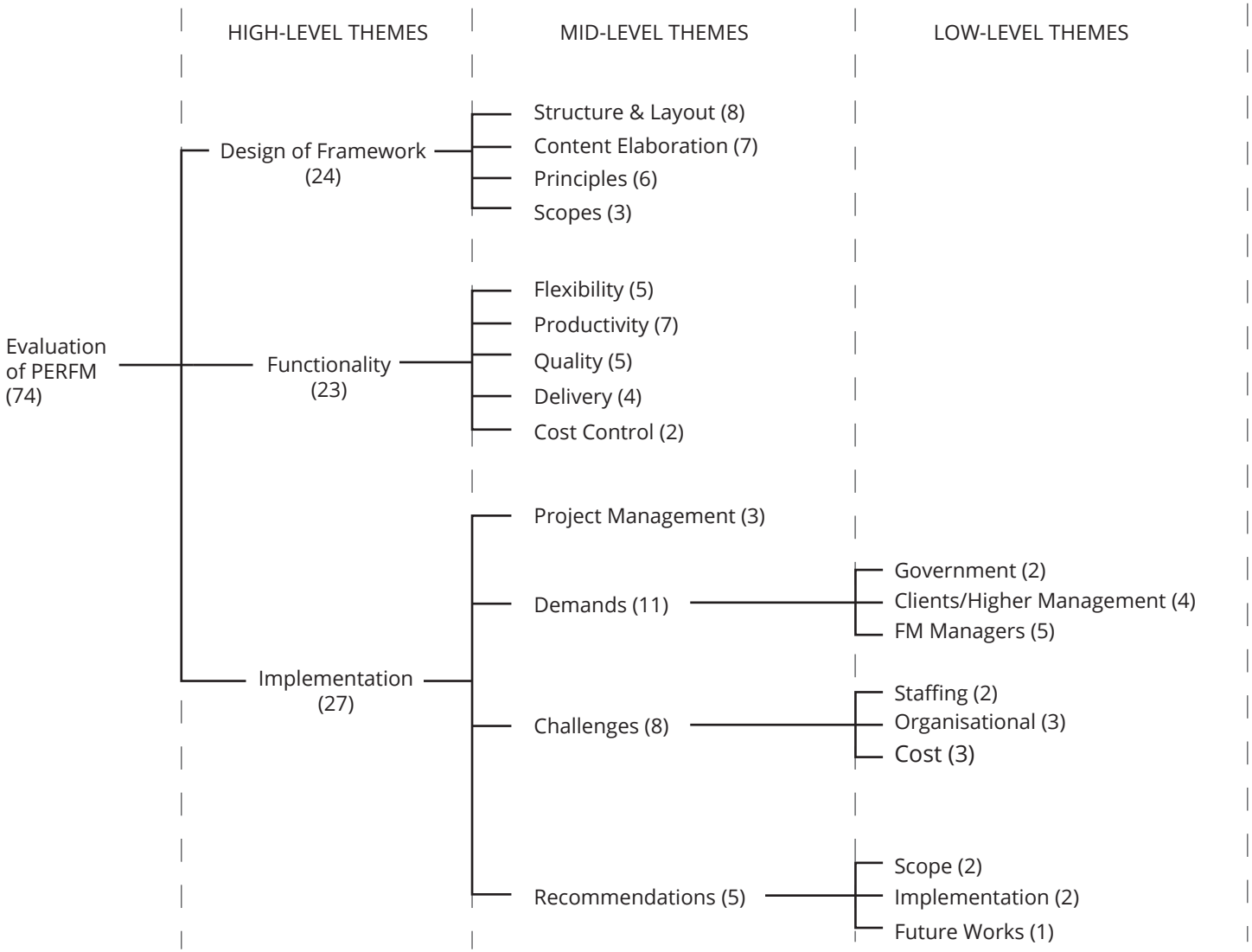
		Does your company implement any PMS for FM?		
		Yes	No	Total
Our FM performance has improved since the implementation of the PMS	Neutral	5	0	5
	Agree	6	0	6
	Strongly Agree	3	0	3
	N/A	0	21	21
Total		14	21	35

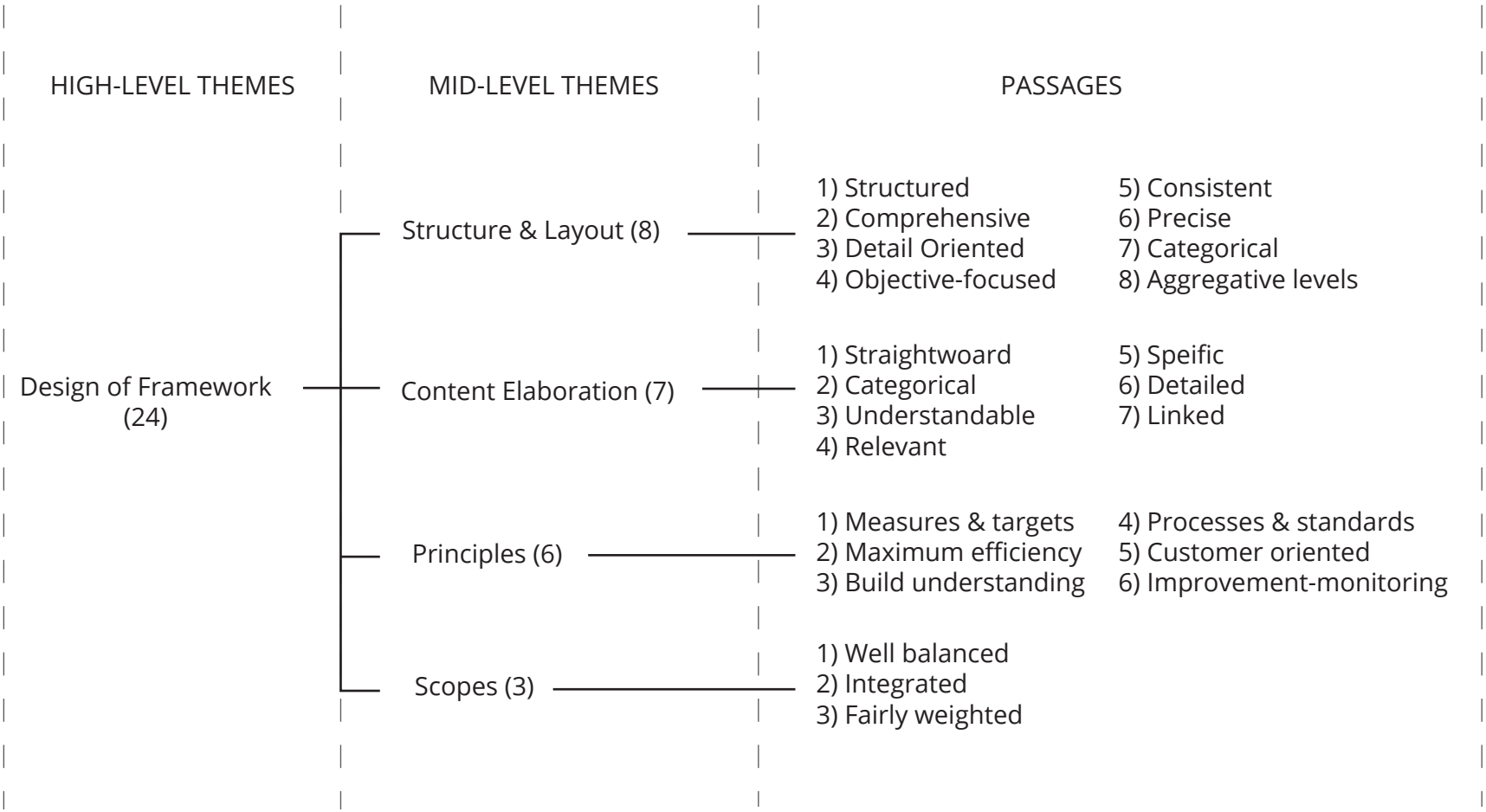
1-Our FM performance has improved since the implementation of the PMS

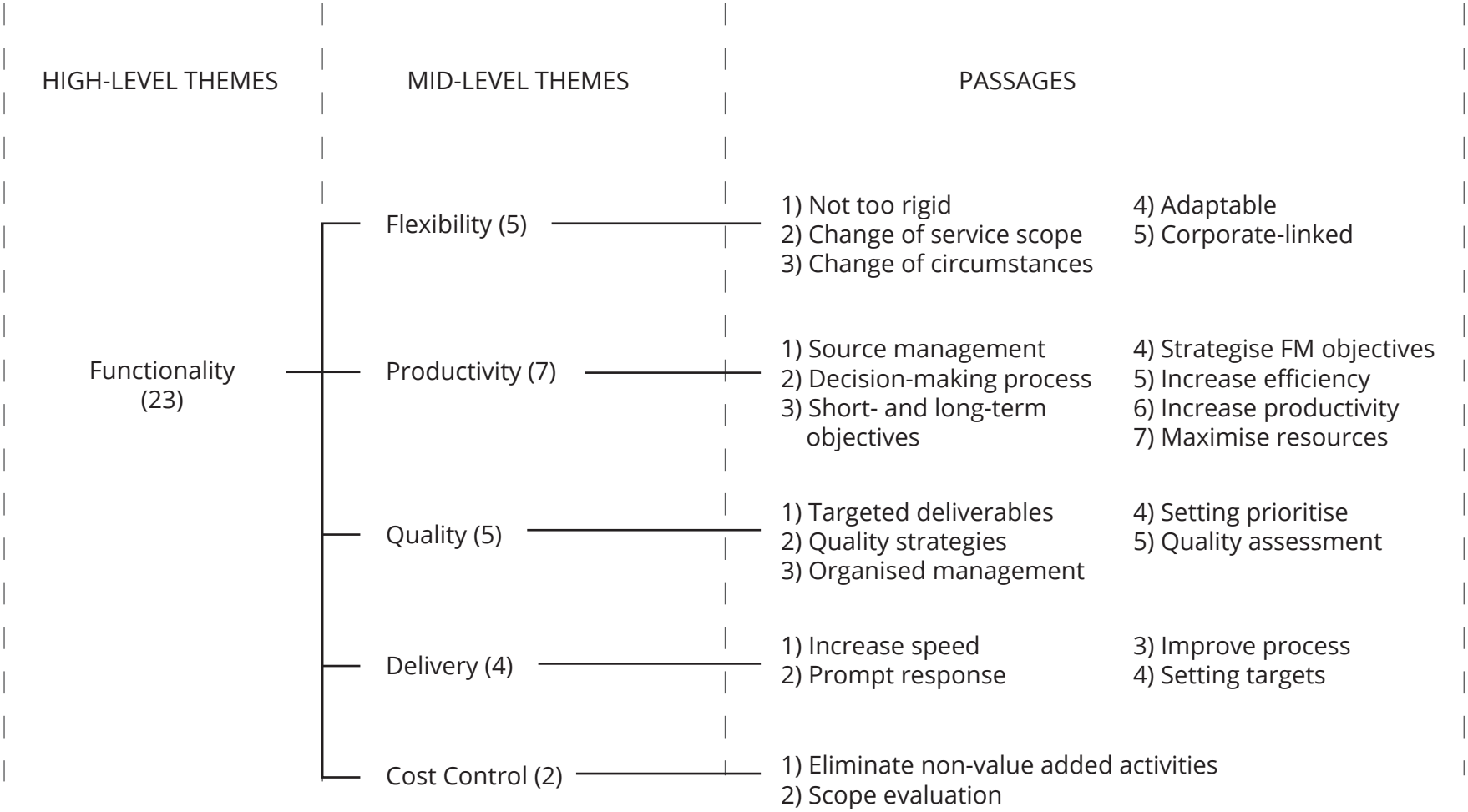
2-Does your company implement any PMS for FM

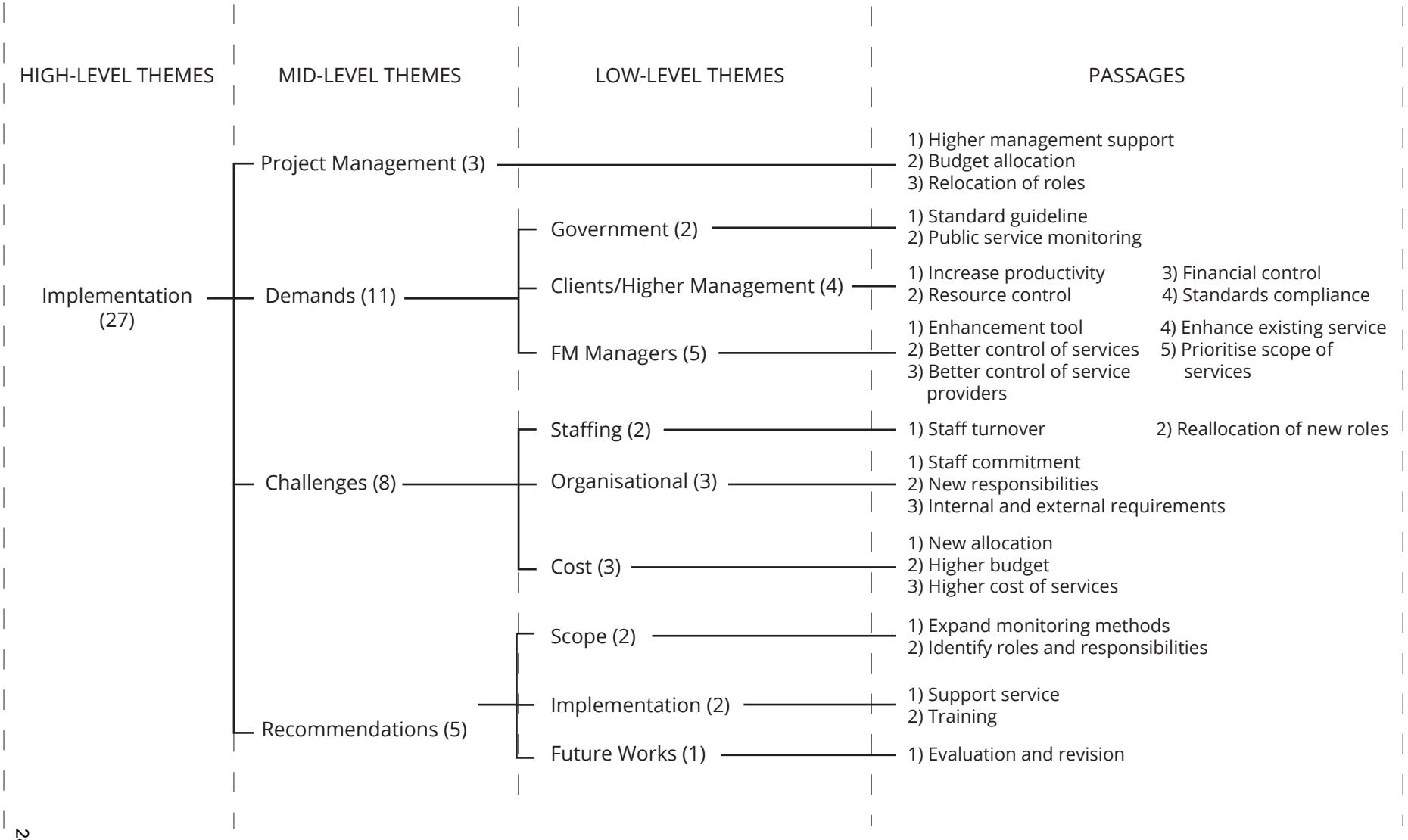


APPENDIX E:
SAMPLE OF NVIVO THEMATIC ANALYSIS DIAGRAM


HIGH-LEVEL THEMES
MID-LEVEL THEMES
LOW-LEVEL THEMES
Evaluation of PERFM (74)
Design of Framework (24)
Structure & Layout (8)
Content Elaboration (7)
Principles (6)
Scopes (3)
Functionality (23)
Flexibility (5)
Productivity (7)
Quality (5)
Delivery (4)
Cost Control (2)
Implementation (27)
Project Management (3)
Demands (11)
Government (2)
Clients/Higher Management (4)
FM Managers (5)
Challenges (8)
Staffing (2)
Organisational (3)
Cost (3)
Recommendations (5)
Scope (2)
Implementation (2)
Future Works (1)


HIGH-LEVEL THEMES
MID-LEVEL THEMES
PASSAGES
Design of Framework (24)
Structure & Layout (8)
1) Structured
2) Comprehensive
3) Detail Oriented
4) Objective-focused
5) Consistent
6) Precise
7) Categorical
8) Aggregative levels
Content Elaboration (7)
1) Straightwoard
2) Categorical
3) Understandable
4) Relevant
5) Speific
6) Detailed
7) Linked
Principles (6)
1) Measures & targets
2) Maximum efficiency
3) Build understanding
4) Processes & standards
5) Customer oriented
6) Improvement-monitoring
Scopes (3)
1) Well balanced
2) Integrated
3) Fairly weighted


HIGH-LEVEL THEMES
MID-LEVEL THEMES
PASSAGES
Functionality (23)
Flexibility (5)
1) Not too rigid
2) Change of service scope
3) Change of circumstances
4) Adaptable
5) Corporate-linked
Productivity (7)
1) Source management
2) Decision-making process
3) Short- and long-term objectives
4) Strategise FM objectives
5) Increase efficiency
6) Increase productivity
7) Maximise resources
Quality (5)
1) Targeted deliverables
2) Quality strategies
3) Organised management
4) Setting prioritise
5) Quality assessment
Delivery (4)
1) Increase speed
2) Prompt response
3) Improve process
4) Setting targets
Cost Control (2)
1) Eliminate non-value added activities
2) Scope evaluation


HIGH-LEVEL THEMES
MID-LEVEL THEMES
LOW-LEVEL THEMES
PASSAGES
Implementation (27)
Project Management (3)
1) Higher management support
2) Budget allocation
3) Relocation of roles
Demands (11)
Government (2)
1) Standard guideline
2) Public service monitoring
Clients/Higher Management (4)
1) Increase productivity
2) Resource control
3) Financial control
4) Standards compliance
FM Managers (5)
1) Enhancement tool
2) Better control of services
3) Better control of service providers
4) Enhance existing service
5) Prioritise scope of services
Challenges (8)
Staffing (2)
1) Staff turnover
2) Reallocation of new roles
Organisational (3)
1) Staff commitment
2) New responsibilities
3) Internal and external requirements
Cost (3)
1) New allocation
2) Higher budget
3) Higher cost of services
Recommendations (5)
Scope (2)
1) Expand monitoring methods
2) Identify roles and responsibilities
Implementation (2)
1) Support service
2) Training
Future Works (1)
1) Evaluation and revision

APPENDIX F:
PERFORMANCE MEASUREMENT FRAMEWORK (PERFM)

Section 1: Functional

FUNCTIONAL	[F1] MANAGEMENT				
Parameters	**Metrics**	**Indicators**	**Attributes**	**Formula/Target**	**Monitoring**
[1] Administration	Updated Records	Staff Records	• Individual staff records are maintained and made available for inspection	No of compliant records / No of records Representative random sample size	• Bi-annually: Measured and monitored using personal records
		Estates Data	• All statutory estates data are accurately recorded and updated weekly	No of compliant entries in sample / No of entries in sample Representative random sample size	• Weekly: Measured using estates records. Monitored by estate manager's documentation inspection.
	Routine Contacts	Service Users Contact	• Managers ensure regular and routine contact with service users/customers and the departmental managers	No of compliant random checks / No of random checks per month	• Monthly: Measured using departmental checklist. Monitored by daily, recorded random checks by supervisor and manager
	System & Control	Effective Service	• Systems and controls are in place to safeguard property, cash and commodities in all relevant services	No of systems in place / No of systems required Performance Tolerance: 10%	Monthly: Measured using departmental checklist. Monitored by weekly recorded random checks by supervisor and manager
	Client's Confidentiality	Policy & Procedures	• Client's confidentiality is respected and protected at all times, achieved by contractor staff adhering to appropriate policies and procedures	• Determined by default	• Monthly: Monitor the reported incidents of breach confidentiality
[2] Staffing	Training & Development	Trained Staff On Site	• Staff, including temporary staff, are inducted and trained to an appropriate level. No staff on site without proper training and induction	• Training records and plans are maintained at all times No of compliant records / No of records. Sample size: 100% per month Performance Tolerance: 5%	• Monthly: Measured using departmental checklist. Monitored by personnel managers through training records and documentation inspection

		Updated Training Records	• The training records for staff including temporary staff are maintained and made available for inspection	No of compliant records / No of records per month Sample size: 100% per quarter Performance Tolerance: 10%	• Quarterly: Measured using departmental checklist. Monitored by personnel managers through training records and documentation inspection
		Capacity & Capabilities	• Adequate number of dedicated staff as per service contract	Determined by default on service: Pass/Fail. No of non-compliances in sample / Total sample size Performance Tolerance: 5%	• Monthly: Measured using departmental checklists. Monitored by regular, recorded random checks by managers and supervisors
		Staff Changes	• Changes in key staff can be made without consultation except resignation or disciplinary action	• Change process is adhered to 100% of the time	• Monthly: Measured using Monthly Performance Report
		Progress	• Continuous improvement is demonstrated by reduction in staff churn	• 90% of staff are retained	• Monthly: Measured using Monthly Performance Report
		Individual Records	• Individual staff records are maintained and made available for inspection	No of compliant records / No of records Representative random sample size	• Bi-annually: Measured and monitored using personnel records
		Reporting Procedures	• Reporting procedures are implemented with regards to the Service Level Specification	Determined by default on service: Pass/Fail. No of non-compliances in sample / Total sample size Performance Tolerance: 5%	• Monthly: Measured using departmental checklists. Monitored by regular, recorded random checks by managers and supervisors
		Customer Service	• Staff comply with, and service delivery accords with, all legislation and notified policies and procedures of the hospital	Determined by default: Pass/Fail No of non-compliances in sample / Total sample size Performance Tolerance: 10%	• Monthly: Measured using departmental checklists. Monitored by regular, recorded random checks by managers and supervisors
	Appearance	Appropriate Attires	• Staff are suitably dressed in appropriate clean clothing and are wearing identity badges	Determined by default: Pass/Fail No of non-compliances in sample / Total sample size Performance Tolerance: 15%	• Monthly: Measured using departmental checklists. Monitored by regular, recorded random checks by managers and supervisors

		Protective Clothing	• Staff are issued with, and are appropriately dressed in, protective clothing and equipment including uniforms, gloves, goggles, plastic aprons and safety shoes	No of compliant checks / No of checks per month Sample size: 100% per month Performance Tolerance: 0%	• Monthly: Measured using departmental checklists. Monitored by personnel managers through documentation inspection and checks by managers and supervisors.
		Personal Hygiene	• Staff maintain an appropriate standard of personal hygiene at all times when in contact with users	Determined by default: Pass/Fail No of non-compliances in sample / Total sample size Performance Tolerance: 15%	• Monthly: Measured using departmental checklists. Monitored by regular, recorded random checks by managers and supervisors
	H&S and Security Compliance	Health Screening	• All staff have satisfactorily passes for occupational health screening appropriate to their role before employment in the services	No of compliant records / No of records per month Sample size: 100% per month Performance Tolerance: 5%	• Monthly: Measured using departmental checklist. Data from personnel records. Monitored by personnel managers through documentation inspection
		Immunisation	• Staff employed to work in areas of exposure-prone procedures are provided with appropriate and relevant immunisation, e.g. Tetanus, Hepatitis B	No of compliant records / No of records per month Sample size: 100% per month Performance Tolerance: 5%	• Monthly: Measured using departmental checklist. Data from personnel records. Monitored by personnel managers through documentation inspection
		H&S Awareness	• Staff demonstrate an awareness of H&S issues	No of compliant checks / No of checks per month Sample size: 100% per month Performance Tolerance: 10%	• Monthly: Measured using departmental checklists. Monitored by weekly-recorded random checks by managers and supervisors. 4 random checks per month
		Security Checks	• Security or police checks are undertaken on all relevant FM personnel in accordance with hospital policies	No of compliant appointments / No of appointments in period Representative random sample size	• Monthly: Measured and monitored against departmental records

		Fire Safety Training	• All FM personnel are trained in the hospital's fire safety procedures as required by the Service Level Agreement and have been made aware of their defined role in the event of fire	No of compliant records / No of records per week Sample size: 100% per month Performance Tolerance: 0%	• Monthly: Measured using departmental checklist. Data from personnel records. Monitored by personnel managers through documentation inspection
		Reporting Procedure	• Reporting procedures are in place for staff suffering from any infectious/defined illness, contact with any person with infectious/defined illnesses, illness suffered during/ following holidays abroad	No of compliant random checks / No of random checks per period Representative random sample size	• Quarterly: Measured using departmental checklist. Monitored by verifyication of departmental procedures
FUNCTIONAL	[F2] CUSTOMER SERVICE				
Parameters	Metrics	Indicators	Attributes	Formula/Target	Monitoring
[1] Service Delivery	Staff Commitment	Standards & Performance	• Staff are consistently responsive, polite and courteous, and co-operative. Staff undertake roles and responsibilities in a professional manner	No of compliant checks / No of checks per month Sample size: 100% per month Performance Tolerance: 0%	• Monthly: Measured using departmental checklists. Monitored by personnel managers through documentation inspection and checks by managers and supervisors. 4 random checks per month
		Competency of Staff	• Appropriate skills and competencies available to undertake a range of duties within defined response times	No of compliant checks / No of checks per month Sample size: 100% per month Performance Tolerance: 0%	• Monthly: Measured using departmental checklists. Monitored by personnel managers through training records and checks by managers and supervisors. 4 random checks per month

	Service Characteristics	Responsiveness	The staff have to portray the willingness to help customers and provide prompt service including: • Quick response to complaints and requisition from users and FM managers • Immediate action to overcome problems with minimum consultation • When the staff promise to do something by a particular time, they do it • Cooperation and openness with customers	Determined by default: Pass/Fail No of non-compliances in sample / Total sample size Performance Tolerance: 10%	• Monthly: Measured using departmental checklists. Monitored by regular, recorded random checks by managers and supervisors
		Reliability	The staff perform the service correctly including honouring the promises and keeping records correctly including: • When the staff promise to do something by a particular time, they do it • If they fail to do it, they do not focus on excuses but on solving the problems • Carry out their work accurately without mistakes • Do the right thing right the first time	Determined by default: Pass/Fail No of non-compliances in sample / Total sample size Performance Tolerance: 10%	• Monthly: Measured using departmental checklists. Monitored by regular, recorded random checks by managers and supervisors
		Tangibles	This focuses on the physical appearance and physical representations of the staff including: • Clear verbal presentation of staff when communicating with customers • The ability that presenters can display and use to provide the service and communicate clearly • Good personality and appearance of staff	Determined by default: Pass/Fail No of non-compliances in sample / Total sample size Performance Tolerance: 10%	• Monthly: Measured using departmental checklists. Monitored by regular, recorded random checks by managers and supervisors

		Empathy	Staff must show caring, individualised attention that the company provides to its customers and have the customer's best interest at heart including: • Listening to customers and acting accordingly • Understanding customers' needs of projects Understanding their business environment • Use of language the customer understands • Focus on customers' objectives instead of their own • Individual attention • Customers are treated importantly and equally by everybody in the company • Commitment to the project and the client	Determined by default: Pass/Fail $\frac{\text{No of non-compliances in sample}}{\text{Total sample size}}$ Performance Tolerance: 10%	• Monthly: Measured using departmental checklists. Monitored by regular, recorded random checks by managers and supervisors
		Assurance	Staff must give assurance that the service qualities that the company provides to its customers include: • Be knowledgeable and confident • The staff has experience and knowledge of the scope of work • High level of quality control by senior management level • Anticipate potential future problems and take appropriate actions to avoid them • Early risk identification and avoidance accordingly • Conduct thorough research of the problems occurred	Determined by default: Pass/Fail $\frac{\text{No of non-compliances in sample}}{\text{Total sample size}}$ Performance Tolerance: 10%	• Monthly: Measured using departmental checklists. Monitored by regular, recorded random checks by managers and supervisors

[2] Requests & Complaints	Requests & Comments	Action	• Enquiries and requests for staff to provide a service service acted upon promptly and within agreed timescales. No adverse feedback relating to contract requirements. Feedback is based on FM Department, Client, General Public and Event Organiser	No of compliant records in month / No of records in month Sample size: 100% Performance Tolerance: 5%	• Monthly: Measured and monitored using logged reports
		Records	• All requests, enquiries and comments are logged and reported upon monthly	No of compliant random checks / No of random checks in month Representative random sample size	• Monthly: Measured using complaints register
	Complaints	Records	• Self assessment by way of logging complaints • Client has easy access to key staff via telephone or email • All complaints are recorded appropriately following the relevant procedures	• No more than an average of 10 calls per month recorded as a result of poor or failed service • All compliments are logged and records are kept of good service testimony • 90% of all communication commitments (performance levels and timeframes) must be met No of compliant random checks / No of random checks in month Representative random sample size	• Monthly: Measured using complaints register
		Action	• All service complaints are being taken action up to satisfactory conclusion or appropriate response	No of compliant records in month / No of records in month Sample size: 100% Performance Tolerance: 5%	• Monthly: Measured and monitored using logged reports

[3] Satisfaction Assessment	Satisfaction Survey	Survey Conduct	• Customer satisfaction surveys are carried out in line with suitable and agreed customer research programmes	• Customer satisfaction surveys are carried out to programme No of actual surveys / Number of comments received Sample size: 100% per survey Performance Tolerance: 15%	• Monthly: Measured using data from comment cards/ satisfaction questionnaires
		Contents & Frequency	• Surveys of customers in relation to all services provided by a contractor are undertaken on a regular basis to ensure a representative random sample of customers. Survey content, frequency and satisfaction results to be agreed with the client prior to implementation.	• Survey content, results and action plan for the surveys of services to be completed in the month have been agreed with the client No. of compliant occasions in sample / No. of occasions in sample Sample size: 10% per month Performance Tolerance: 10%	• Monthly: Measured and monitored using Quality Assurance System and Monthly Performance Report
		Action Plan	• Action plan agreed with the client, and implemented for satisfactory responses	No. of compliant occasions in sample / No. of occasions in sample Sample size: 10% per month Performance Tolerance: 10%	• Monthly: Measured and monitored using Quality Assurance System and Monthly Performance Report

FUNCTIONAL	[F3] CONTRACT MANAGEMENT				
Parameters	Metrics	Indicators	Attributes	Formula/Target	Monitoring
[1] Administration & Management	Staff	Working Permit	• Permit to work system is complied with	No of compliant records in month / No of records in month Sample size: 100% Performance Tolerance: 0%	• Bi-annually: Measured and monitored using personal records
		Qualified	• Suitably qualified person cover is maintained all the time	No of compliant records in month / No of records in month Sample size: 100% Performance Tolerance: 0%	• Monthly: Measured and monitored against departmental records
		Supervision	• Daily management and supervision of the services is provided by a team of staff at an appropriate level	• Percentage of compliant days per month. • Performance Tolerance: 5%	• Monthly: Measured using departmental checklist. Data from duty records. Monitored by the supplier general managers through documentation inspection
	Materials/ Equipment	Safety	• All service provider materials, chemicals and equipments are stored and used in safe conditions appropriate to ensure no impact to any activities	No. of compliant occasions in sample / No. of occasions in sample Sample size: 10% per month Performance Tolerance: 0%	• Monthly: Measured and monitored using Quality Assurance System and Monthly Performance Report
[2] Service Quality	Quality Delivery	Issues	• No significant operational issues raised by clients	• No written formal complaint escalated to client as a result of failure to resolve at local level No of compliant records in month / No of records in month Sample size 100% Performance Tolerance: 5%	• Monthly: Measured and monitored using logged reports and Monthly Performance Report

		Request	• Ad hoc requests for information are processed within agreed time frames	• Requests for information are provided within 5 days No. of compliant occasions in sample No. of occasions in sample Sample size: 10% per month Performance Tolerance: 0%	• Monthly: Measured and monitored using logged reports and Monthly Performance Report
		Complaints	• All complaints received by the supplier are recorded and forwarded to the FM Department nominated officers as identified in the FM Compliant Procedure	No of compliant records in month No of records in month Sample size: 100% Performance Tolerance: 5%	• Monthly: Measured and monitored using logged reports and Monthly Performance Report
	Audit	Completion	• Audit programmes are completed	• 90% of audits completed on time No of compliant records in month No of records in month Sample size: 100% Performance Tolerance: 5%	• Monthly: Measured and monitored against departmental records and monthly performance report
	Compliance	Procurement Process	• Complete compliance with the agreed procurement process	• 100% compliance with procurement process No. of compliant occasions in sample No. of occasions in sample Sample size: 10% per month Performance Tolerance: 10%	• Monthly: Measured and monitored using Quality Assurance System and Monthly Performance Report
		Financial Approval	• Complete compliance with the agreed financial approval process and timescales	• 100% compliance with agreed approval process No. of compliant occasions in sample No. of occasions in sample Sample size: 10% per month Performance Tolerance: 10%	• Monthly: Measured and monitored using Quality Assurance System and Monthly Performance Report

	Communication		• FM Department and Client are kept informed of the status of all works and made aware of any delays or problems. The team has been proactive, communicated faults or defects, and generally achieved set objectives and timescales	• 100% compliance with the communication process No. of compliant occasions in sample No. of occasions in sample Sample size: 10% per month Performance Tolerance: 10%	• Monthly: Measured and monitored using Quality Assurance System and Monthly Performance Report

[3] Reports & Submission	Reports	Timely	• Quality of weekly and monthly report is accurate and up to standard. Submitted to FM Department and Client by agreed deadlines	• Reports are issued 5 days before the monthly review meetings • Monthly meeting minutes are issued within 5 days of the meeting No of compliant records in month No of records in month Sample size: 100% Performance Tolerance: 5%	• Monthly: Measured and monitored using logged reports and Monthly Performance Report
		Action Points	• Corrective action points are captured and issued within the agreed times	• Corrective action points are recorded and issued within 5 days No of compliant records in month No of records in month Sample size: 100% Performance Tolerance: 5%	• Monthly: Measured and monitored using logged reports and Monthly Performance Report
	Invoicing	Timeliness	• Quality and timeliness of invoicing and response to enquiries and instructions	• 100% compliance with the process No. of compliant occasions in sample No. of occasions in sample Sample size: 10% per month Performance Tolerance: 10%	• Monthly: Measured and monitored using Quality Assurance System and Monthly Performance Report
	Quotations & Event Costings	Submission	• Quotations and budget estimates submitted in accordance with the contract: 5 days for In-House works and 7 days for Sub-contracted works	• 100% compliance with the process No. of compliant occasions in sample No. of occasions in sample Sample size: 10% per month Performance Tolerance: 10%	• Monthly: Measured and monitored using Quality Assurance System and Monthly Performance Report

FUNCTIONAL	[F4] ORGANISATIONAL POLICY				
Parameters	Metrics	Indicators	Attributes	Formula/Target	Monitoring
[1] Control Assurance	System	Quality Assurance (QA)	• Quality assurance system procedures are applied in accordance with the agreed QA system	No of non-compliances / No of scheduled applications	• Weekly: Measured and monitored against departmental records.
		Log Service Requests	• Systems are in place to log all requests for services up to completion	No of days in period when system is operating / No of days in period Performance Tolerance: 5%	• Monthly: Measured and monitored using monthly records of activity
	Protocols	Standard Compliance	• Protocols for each relevant Control Assurance/Standards for Better Health obligation are in place to ensure compliance with all relevant Controls Assurance and Standards for Better Health	No of compliant records / No of records per month Representative random sample size	• Quarterly: Monitored and measured using training records, Quality Assurance System and Monthly Performance Report
	Estates Data	Updated Record	• All Quality Assurance Estates data requirements are accurately recorded and regularly updated	No of compliant entries in sample / No of entries in sample Representative random sample size.	• Weekly: Measured using estates records. Monitored by estate manager's documentation inspection.
	Quality Audit	Internal Audit	• Internal quality audit programme	• Internal quality audit programs completed to schedule	• Quarterly: Monitored and measured using Quality Assurance System and Monthly Performance Report
	Environmental Approach	Sustainability	• Sustainable plan must be developed and measurable targets must be set accordingly	• Maintain and revise the targets and approaches for the plan	• Quarterly: Monitored and measured using Quality Assurance System and Monthly Performance Report
		Recycling Plan	• Develop an annual proposal on recycling plan which covers policies and targets for increasing levels of recycling	• Maintain and revise the targets and approaches for the plan	• Quarterly: Monitored and measured using Quality Assurance System and Monthly Performance Report

[2] Business Continuity Procedures	Business Plan	Provision	• Business continuity plan & rectification measures must be provided	• Maintain copy of the latest supplier's business continuity plan and emergency procedures	• Quarterly: Monitored and measured using Quality Assurance System and Monthly Performance Report
	Rapport & Public Relation	Consultation	• Service provider constantly in liaison with FM manager for inputs and comments	• Maintain and revise the input targets and approaches for the enhancement plan	• Quarterly: Monitored and measured using Quality Assurance System and Monthly Performance Report
ADDITIONAL FOR HEALTHCARE					
[1] Control Assurance	Protocols	Standard Compliance	• Protocols for each relevant Control Assurance/Standards for Better Health obligation are in place to ensure compliance with all relevant Controls Assurance and Healthcare Standards for Better Health	No of compliant records / No of records per month Representative random sample size	• Quarterly: Monitored and measured using training records, Quality Assurance System and Monthly Performance Report
	Compliance	NHS Standard	• The hospital is provided with all data necessary for it to comply with its obligations to the NHS in respect of Controls Assurance/Standards for Better Health	No of compliant requests for data / No of requests for data in period per month	• Quarterly: Monitored and measured using training records, Quality Assurance System and Monthly Performance Report

FUNCTIONAL	[F5] HEALTH & SAFETY (H&S)				
Parameters	Metrics	Indicators	Attributes	Formula/Target	Monitoring
[1] Health & Safety (H&S)	H&S Manual	Compliance	• A comprehensive H&S Manual is available and complied with by all customers	No of compliant departments / No of departments Pass/Fail	• Monthly: Measured using departmental checklists. Monitored by bi-annual audit of availability by H&S advisor
		Issuance	• A comprehensive H&S Manual is issued to all agreed departments	No of compliant departments / No of departments Performance Tolerance: 5%	• Bi-annually: Measured using departmental checklists. Monitored by bi-annual audit of availability by FM & H&S advisor
	H&S Procedures	Statutory Requirements	• All statutory requirements are complied with when undertaking service delivery	No of compliant checks / No of checks per month Sample size: 100% per month Performance Tolerance: 0%	• Monthly: Measured using departmental checklist. Monitored by regular, recorded random checks by managers and supervisors
		Responsibilities & Standards	• No significant deficiencies found in the contractor's H&S responsibilities set out in the contractor's Agreement	No of compliant checks / No of checks per month Sample size: 100% per month Performance Tolerance: 0%	• Monthly: Measured using departmental checklist. Monitored by regular, recorded random checks by managers and supervisors
		Work Ethic	• All contractors staff must cooperate with FM Department at all times	No of compliant checks / No of checks per month Sample size: 100% per month Performance Tolerance: 0%	• Monthly: Measured using departmental checklist. Data from personnel records. Monitored by personnel managers through documentation inspection
		Safety Attires/ Accessories	• Proper safety working attires and accessories or PPE must be worn during all external work areas and for the tasks as identified in the service agreement. Construction/hard hats must be worn at all times when working at a high height or where there is a risk from others overhead	No of compliant checks / No of checks per month Sample size: 100% per month Performance Tolerance: 5%	• Monthly: Measured using departmental checklist. Data from personnel records. Monitored by personnel managers through documentation inspection

		Safety Rules	• All staff should not try or breach any safety rules which will result in suspension or termination	No of compliant checks No of checks per month Sample size: 100% per month Performance Tolerance: 0%	• Monthly: Measured using departmental checklist. Data from personnel records. Monitored by personnel managers through documentation inspection
		Proof of Work	• Contractors must be able to provide proof of qualification/certificates pertaining to special works, i.e. calibration, servicing of electrical equipment	No of compliant checks No of checks per month Sample size: 100% per month Performance Tolerance: 0%	• Monthly: Measured using departmental checklist. Data from personnel records. Monitored by personnel managers through documentation inspection
		Emergency & Evacuation Procedures	• Contractors must be aware and fully informed of the Emergency and Evacuation procedures	No of compliant checks No of checks per month Sample size: 100% per month Performance Tolerance: 0%	• Monthly: Measured using departmental checklist. Data from personnel records. Monitored by personnel managers through documentation inspection
		Incident Record	• All incidents must be recorded and reported accordingly to the FM Department	Number of incidents actioned Total number of incidents per week	• Monthly: Measured and monitored using incident report book
		Provision of Signages	• All information and signages pertaining to the Emergency and Evacuation Procedures must be put in the designated areas or routes	No of compliant checks No of checks per month Sample size: 100% per month Performance Tolerance: 0%	• Monthly: Measured using departmental checklist. Data from personnel records. Monitored by personnel managers through documentation inspection
		First Aid Facilities	• First aid equipment must be available at all times	No of compliant checks No of checks per month Sample size: 100% per month Performance Tolerance: 0%	• Monthly: Measured using departmental checklist. Data from personnel records. Monitored by personnel managers through documentation inspection
	H&S Training	Training Records	• All suppliers facilities staff are trained and trainings are recorded up-to-date	No of compliant checks No of checks per month Sample size: 100% per month Performance Tolerance: 5%	• Monthly: Measured using departmental checklist. Data from personnel records. Monitored by personnel managers through documentation inspection

		Safety Training	• All staff had attended safety training in respect of equipment and machinery used in their job, lifting and handling techniques, COSHH, hazard spotting, waste disposal, first aid procedures, infection control and fire safety	No of compliant checks / No of checks per month Sample size: 100% per month Performance Tolerance: 5%	• Monthly: Measured using departmental checklist. Data from personnel records. Monitored by personnel managers through documentation inspection
	H&S Records	Updated Records	• All records and procedures pertaining to accidents, incidents and the responsibilities and tasks involved are to be up-to-date • Maintain and improve all H&S records and files	• No H&S safety incidents as a result of the suppliers' acts or omissions • All records are in place and up-to-date	• Monthly: Measured using departmental checklist. Data from personnel records. Monitored by personnel managers through documentation inspection
[2] Handling of Substances & Chemicals	Control of Substances Hazardous to Health (COSHH)	Updated	• COSHH data is available and up-to-date	No of compliant checks / No of checks per month Sample size: 1005 per month Performance Tolerance: 5%	• Bi-annually: Measured using departmental checklists. Monitored by regular, recorded random checks by managers and supervisors
	Chemicals Handling	Storage	• All chemical solutions and powders are stored in appropriate and secure facilities	No of compliant checks / No of checks per month Sample size: 100% per month Performance Tolerance: 5%	• Monthly: Measured using departmental checklists. Monitored by weekly-recorded random checks by managers and supervisors. 4 random checks per month
		Labelling	• All chemical solutions and powders are labelled with relevant safety precautions and COSHH information	No of compliant checks / No of checks per month Sample size: 100% per month Performance Tolerance: 0%	• Monthly: Measured using departmental checklists. Monitored by weekly-recorded random checks by managers and supervisors. 4 random checks per month
	Hazards	Identification	• All areas that are free from combustibles and other traffic hazards must be identified by the contractors accordingly	No of compliant checks / No of checks per month Sample size: 100% per month Performance Tolerance: 0%	• Monthly: Measured using departmental checklists. Monitored by weekly-recorded random checks by managers and supervisors. 4 random checks per month

		Handling	• Contractors must ensure that all high-risk work is only being handled by qualified and authorised staff	No of compliant checks / No of checks per month Sample size: 100% per month Performance Tolerance: 0%	• Monthly: Measured using departmental checklists. Monitored by weekly-recorded random checks by managers and supervisors. 4 random checks per month
TECHNICAL	[F6] RISK MANAGEMENT				
Parameters	Metrics	Indicators	Attributes	Formula/Target	Monitoring
[1] Risk Management	Risk Management Guide	Provision of Manual	• A comprehensive Risk Management Manual is available and used by all employees	No of compliant random checks / No of random checks per month	• Bi-annually: Measured using departmental checklists. Monitored by random checks by managers and supervisors
	Risk Assessments	Consistent Monitoring	• All risk assessments to be monitored, audited and reviewed on an annual basis or more frequently, depending on the work task	Monitoring exercises completed to schedule No of compliant checks / No of checks per month Sample size: 100% per month Performance Tolerance: 10%	• Quarterly: Monitored and measured using Quality Assurance System and Monthly Performance Report
		Scheduled Inspection	• Regular scheduled inspections are undertaken to identify hazards and reduce risks which relate to the operation of contractor's businesses and their impact on services and public safety	No of compliant random checks / No of random checks per week Sample size: 100% per month Performance Tolerance: 5%	• Monthly: Measured using departmental checklists. Monitored by weekly-recorded random checks by managers and supervisors. 4 random checks per month
	Reporting Procedures	Compliance with Procedures	• Accident and untoward occurrences' reporting procedures are available, known, understood and complied with by staff	No of compliant checks / No of checks per month Sample size: 100% per month Performance Tolerance: 5%	• Monthly: Measured using departmental checklists. Monitored by verifying departmental procedure
	Warning Notices	Notice Display	• Suitable warning notices are displayed in working areas	No of compliant checks / No of checks per month Sample size: 1005 per month Performance Tolerance: 5%	• Monthly: Measured using departmental checklists. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month

	First Aid Facilities	Availability	• Suitable first aid facilities are provided in specific areas including for staff	No of compliant checks / No of checks per month Sample size: 100% per month Performance Tolerance: 10%	• Monthly: Measured using departmental checklists. Monitored by weekly-recorded random checks by managers and supervisors. 4 random checks per month

Section 2: Technical

TECHNICAL	[T1] ASSET MAINTENANCE				
Parameters	Metrics	Indicators	Attributes	Formula/Target	Monitoring
[1] Asset Management	Life Cycle Replacement & Refurbishment of Assets	Process	• Replacement or refurbishment being carried out in accordance with quality procedures • Replacement or refurbishment being commenced in accordance with the timetable indicated on the service agreement	No of compliant inspections per month / No of inspections per month	• Monthly: Measured and monitored using Maintenance Schedule Logs and Monthly Performance Report
		Statutory Inspections & Tests	• Statutory inspections and tests required for insurance purposes • No grace period beyond final date for statutory inspection and tests unless the contractor could demonstrate to the authority that they had used all reasonable endeavours to arrange and facilitate testing	No of compliant inspections per month / No of inspections per month	• Monthly: Measured and monitored using Maintenance Schedule Logs and Monthly Performance Report
		Planned Life Cycle Refurbishment and Replacement	• 1 month until commencement of activity for works shown on the quarterly programme	No of compliant inspections per month / No of inspections per month	• Monthly: Measured and monitored using Maintenance Schedule Logs and Monthly Performance Report
[2] Building Services	Power	Supply & Back-Up	• Contractor must be responsible to ensure a continuous power supply and have a back-up system in the event of power failure	No of compliant inspections per month / No of inspections per month	• Monthly: Measured and monitored using Maintenance Schedule Logs
	Ptable Water	Statutory Quality	• Ensure that water meets statutory quality levels	• Twice a year testing of the water quality by specialists	• Bi-annual monitoring

	Domestic Hot and Cold Water	Statutory Quality	• Ensure that water meets statutory quality levels	Prioritise targets in the event of problems which cause significant H&S risk: • Urgent Priority: Grace period of 2 hours • In the event of problems that breach the Output Specification (i.e., blocked drain, leaking water pipe, low water pressure): • High Priority: Grace period of 2 hours	• Daily testing/inspection of the water temperature by the authority
	Drainage	Function	• Ensure that the drainage areas are all well serviced and do not obstruct any other functions or services	Prioritise targets in the event of problems that breach the Output Specification: • High Priority: Grace period of 2 hours	• Monthly: Measured and monitored using the Maintenance Schedule Logs
	Sewerage	Function	• Ensure that the drainage areas are all well serviced and do not obstruct any other functions or services	Prioritise targets in the event of problems that breach the Output Specification: • High Priority: Grace period of 2 hours	• Monthly: Measured and monitored using the Maintenance Schedule Logs
[3] General Maintenance	Building	Systems	• Systems are in place to ensure all buildings are maintained to provide a safe environment	No of compliant inspections per month / No of inspections per month	• Monthly: Measured and monitored using Rolling Building Audit
		New Buildings	• All new and refurbished buildings are maintained to an excellent condition	No of compliant inspections per month / No of inspections per month	• Monthly: Measured and monitored using Rolling Building Audit
	Routines & Repairs	Monitoring	• Maintenance routines and repairs are monitored to ensure correct quality standards are met	No of compliant random checks / No of random checks per month	• Weekly: Measured and monitored against departmental records

	Schedule	Statutory planned works	• Statutory planned maintenance works to be carried out in accordance with maintenance schedule	No of tasks completed / Scheduled tasks per month	• Monthly: Measured and monitored using the Maintenance Schedule Logs
		Routine planned works	• Routine planned building maintenance works to be carried out in accordance with maintenance schedule	No of tasks completed / Scheduled tasks per month Sample size: 25%	• Monthly: Measured and monitored using the Maintenance Schedule Logs
	Areas/ Elements	Lifts & Escalators	• All lifts and escalators must be ensured in operating order at all times with no obvious fault or serious problems that can endanger the user	No of compliant inspections per month / No of inspections per month	• Monthly: Measured and monitored using Rolling Building Audit
			• All lifts must be at correct levels and not exposing any slip/trip hazards	No of compliant inspections per month / No of inspections per month	• Monthly: Measured and monitored using Rolling Building Audit
			• Emergency buttons, telephones and lift alarms are in working order at all times	No of compliant inspections per month / No of inspections per month	• Monthly: Measured and monitored using Rolling Building Audit
		Common Areas	• Internal and external pedestrian routes and stairs are well lit	No of compliant inspections per month / No of inspections per month	• Monthly: Measured and monitored using Rolling Building Audit
			• All surfaces are free from holes, spillages and other slip or trip hazards	No of compliant inspections per month / No of inspections per month	• Monthly: Measured and monitored using Rolling Building Audit
			• Main access areas are cleared from any spillage and materials that can cause them to be slippery and dangerous to the users	No of compliant inspections per month / No of inspections per month	• Monthly: Measured and monitored using Rolling Building Audit
			• All the drain covers are intact and in good condition	No of compliant inspections per month / No of inspections per month	• Monthly: Measured and monitored using Rolling Building Audit
		Toilets & Changing Facilities	• All toilet and changing facilities are cleaned and maintained at the specific standards	No of compliant inspections per month / No of inspections per month	• Monthly: Measured and monitored using Rolling Building Audit

			• All equipments and hot water must be ensured to be available in all the toilet and changing rooms	No of compliant inspections per month / No of inspections per month	• Monthly: Measured and monitored using Rolling Building Audit
			• All the floor and surfaces must be free from any leakages (water/soap) which could be trip/slip hazards	No of compliant inspections per month / No of inspections per month	• Monthly: Measured and monitored using Rolling Building Audit
			• Changing equipment is in good operating condition	No of compliant inspections per month / No of inspections per month	• Monthly: Measured and monitored using Rolling Building Audit
		Plant Room	• Plant rooms and risers must be locked at all times when not in use	No of compliant inspections per month / No of inspections per month	• Monthly: Measured and monitored using Rolling Building Audit
			• No combustibles are stored in plant rooms and fire extinguishers must be located nearby	No of compliant inspections per month / No of inspections per month	• Monthly: Measured and monitored using Rolling Building Audit
			• Ventilation and lighting in the plant room must be functioning properly	No of compliant inspections per month / No of inspections per month	• Monthly: Measured and monitored using Rolling Building Audit
		Roof and Water Tank	• Roof area, tower and water tanks can be accessed by authorised workers or contractors. All fixed ladders and locks are secured	No of compliant inspections per month / No of inspections per month	• Monthly: Measured and monitored using Rolling Building Audit
			• The water gauge and water temperature must be measured consistently as per specified frequency	No of compliant inspections per month / No of inspections per month	• Monthly: Measured and monitored using Rolling Building Audit
[4] Mechanical & Electrical (M&E)	Quality, Environment, H&S and Training	Integrated Management System (IMS)	• A comprehensive IMS is implemented across all services provided under the contract and maintained in order to remain current in terms of statutory compliance	• The IMS encompasses the legal requirements in order to successfully deliver each of the agreed services	• Quarterly Compliance Audit, External verification audits i.e., ISO
				• All employees engaged on the contract understand their role in operating the IMS	• Quarterly Compliance Audit
				• The supplier informs client of any change in legislation, their proposals to ensure compliance	• Changes in legislation & proposals and the cost associated are communicated in a timely and accurate manner

		Records	• Records are held in order to evidence that the system has been fully implemented and maintained	• The records held within the IMS are comprehensive, current and up-to-date	• Annual supplier internal and Annual • Quarterly Compliance Audits
		Programmes	• The supplier will contribute as required to the retention and upkeep of certifications and associated programmes (ISO9001, ISO14001, etc)	• The requirements of the standards in compliance with the related bodies are met at all times	• Surveillance audits
	Continuing Improvement and Added Value	Meetings	• Participation in regular contract review meetings	• Open and honest dialogue with a view to flushing out challenges and putting forward ideas for improvement	• Regular review meetings take place and are constructive, meaningful and documented
		Initiatives	• Generation of internal initiatives to improve the service and add value to its stakeholder, customers and consumers	• Evidence must exist to show that opportunities have been made available, e.g.,, minutes of meetings, consultation documents, initiatives, etc	• Quarterly Compliance Audit
		Willingness	• An environment of autonomy, openness, consultation, honesty and willingness to learn and improve	• Evidence must exist to show that opportunities have been made available, e.g., minutes of meetings, consultation documents, initiatives, etc	• Quarterly Compliance Audit
		Employee	• Each employee must be challenged and developed in order to improve performance	• Each employee must participate in a suitable continuing professional development programme	• Annual supplier internal • Annual Quarterly Compliance Audits
		Procedures	• Maintain procedures to actively solicit, record and resolve all complaints or compliments by stakeholders. Notify clients of all complaints and compliments, along with actions taken	• To keep records of all complaints or compliments and actively use the records to improve the service	• Monthly performance report
	Operational Service Delivery (In-house and supply chain)	Procurement	• Communication with FM department on matters relating to contract	• Attendance at contractual meetings and timely response to ad hoc requests for meetings and to other communications	• Quarterly Compliance Audit

		Supervision & Monitoring	• A system is to be implemented for regular inspection on a sampling basis of all works carried out under the contract	• Monitoring is carried out on a minimum of 10% of all works and the monitoring is documented	• Quarterly Compliance Audit
	Management of Emergency, Disaster Planning and Business Continuity Issues	Assistance	• To assist FM department and add value to the process	• Attendance at meeting as required and timely response to ad hoc requests for meetings and to other communications	• Quarterly Compliance Audit • Performance review after incident report submitted
	Provision of Operational Management & Suitable In-House Labour	Competency	• The required competencies and compliments are available at all agreed times in order to fulfil the contractual requirements	• No failure to provide	• Spot checks by FM department
		Standards	• Employees observe acceptable standards of personal hygiene, courtesy and consideration at all times	• No failure to provide	• Spot checks by FM department
		Uniform	• Employees wear appropriate uniforms including personal protective clothing and identity in providing the service or undertaking works	• No failure to provide	• Spot checks by FM department
	Commercial Management of In-House and Supply Chain Activities to Ensure Value for Money	Value	• Value for money to be obtained at all times and for all activities (sub-contract arrangements, procurement of materials, etc)	• Sound supply chain and best buy processes to be in place, implemented and fully demonstrated at all times	• Quarterly Compliance Audit, Spot checks and External Quality Service Audits all by FM department
		Benchmarking	• The services are regularly benchmarked against agreed relevant criteria (internal and external)	• Costs are to be within the upper 1st quartile	• Management review process
		Expenditures	• Budgets are not exceeded and all expenditures can be adequately justified and defended if challenged	• Commercial records are auditable and up-to-date; budget expenditure is tracked over time and appropriately managed	• Quarterly Compliance Audit, Spot checks and External Quality Service Audits all by FM department

	Administration and Upkeep of All Service Systems, Documents & Records	Service Records	• All records that are required to be in order to evidence the services are complete, locatable and up-to-date at all times	• The documents are filed and updated to reflect the current situation at all times	• Quarterly Compliance Audit
		Asset Register	• A detailed asset register exists that records the asset details and the specification and frequency of any planned maintenance tasks	• The documents are filed and updated to reflect the current situation at all times	• Quarterly Compliance Audit
		Documents	• Current and future reference/controlled documents are maintained	• The documents are securely retained and updated to reflect the current situation at all times	• Quarterly Compliance Audit
	Provision of Management Information (MI) for monthly reports	MI delivery	• Gathering and preparing of comprehensive MI relating to the delivery of the contractual services	• The MI must be formatted in the agreed manner, and be comprehensive, accurate and communicated in a timely manner	• No failure to produce MI by the agreed submission date
	FM Helpdesk Interface	Interface Arrangements	• Liaise effectively with FM Helpdesk and on-site teams on all reactive works	• Communicate effectively on work issued and completed, including any delays in completing work within agreed timescales	• Monthly performance report
	CAFM System in Operation and Administration	Participation	• Liaise effectively with FM Helpdesk and on-site teams on all reactive works	• The information communicated to the CAFM administrators is relevant, accurate and up-to-date and communicated in a timely manner	• Monthly performance report
	Control of Suppliers Audit	Monitoring	• An annual audit is undertaken of each of the key suppliers who participate in the scheme and a detailed report (including a risk prioritised corrective action plan is produced and submitted to FM department to enable the monitoring and continuing improvement of the system)	• The reports are prepared in the agreed format and are submitted to FM department by the agreed timescales	• Monthly performance report
	Management of Permit to Works	Register	• The supplier maintains an up-to-date register of authorised persons for each permit discipline	• The records and register are complete and up-to-date	• Quarterly Compliance Audit

		Issuance	• The supplier delivers the required permits to work as required by the originator provided that the required advance notice period of 5 working days is given	• Permits are issued as required	• Quarterly Compliance Audit
		Audit	• The supplier audits the permits to work annually to ensure that the system is operated as per the relevant policy and procedure	• Documentary evidence of the audit and the findings is available	• Quarterly Compliance Audit
	Project Management of Small Works	Performance Standard	• All services to be delivered in accordance with the relevant performance standards	• Refer to the respective performance standards within the relevant matrix	• Works meet the respective performance standards within the relevant matrix
		Execution	• Works up to £1000 will be executed on the basis of a verbal quotation or a hand-written quotation as befits the requirements and the urgency of the requests. Above £1000 value per job the supplier will provide formal written quotations within 7-14 days of the request	• Works above £1000 and below £10,000 will be undertaken subject to prior approval, and will not be procured via competitive tender but will be awarded against a formal fixed lump sum quotation, which will be priced in advance of the works being started. For works in this category all proposals will include an itemised breakdown of costs	• Spot checks by FM department
		Output	• All services to be delivered in accordance with the agreed performance standards as agreed on a project by project basis	• To be agreed on a project basis	• To be agreed on a project basis
	M&E Works	Guidelines	• All M&E works must be carried out as per relevant guidelines	No of compliant inspections per month / No of inspections per month	• Monthly: Measured and monitored using Rolling Building Audit
		Service Agreement	• All M&E works must be carried out as per relevant guidelines	No of compliant inspections per month / No of inspections per month	• Monthly: Measured and monitored using Rolling Building Audit
	Plant/ Equipment	Guidelines	• All mechanical plant and equipment is operated in line with relevant manufacturer's guidelines and good practice	No of compliant inspection per month / No of inspection per month	• Monthly: Measured and monitored using departmental checklist

		Fit for Purpose	• All plant and equipments must be in a safe condition and fit for purpose	No of compliant inspection per month / No of inspection per month	• Monthly: Measured and monitored using departmental checklist
	Testing/ Inspecting	Statutory Testing	• Statutory testing, including PAT testing of notified patient-owned equipment is carried out as required	No of tests completed per month / No of statutory tests per month Representative random sample size	• Monthly: Measured and monitored using departmental checklist
		Requirement	• All electrical equipments is 110v or less and has been tested accordingly	No of tests completed per month / No of statutory tests per month Representative random sample size	• Monthly: Measured and monitored using departmental checklist
		Statutory Inspection	• Any actions that are required following statutory testing and inspections are carried out accordingly	No of compliant commissions / No of commissions per month Representative random sample size	• Monthly: Measured and monitored using departmental checklist
	Critical Spares Inventory	Stocking	• A joint critical spares stock-take is to be carried out within 3 months of the commencement of the contract. At this time the inventory is then formally handed over to the supplier to store at the supplier's risk	• The jointly validated inventory exists and is accurate	• Quarterly Compliance Audit
		Process	• Establish a process for recording usage/storage of spares for inclusion in an annual report	• Usage monitored and reconciliation of stock levels to consumption effected by a six-monthly stock-take	• Quarterly Compliance Audit

	Lifecycle and Hand-Back Asset Replacement Plan	Lifecycle Plan	• Provide a suitable lifecycle plan setting out the lifecycle philosophy and indicative programmed elemental breakdown of capital costs for asset replacement at the optimum time to prevent excessive maintenance and repair expenditure at the end of its economic life • The indicative elemental breakdown shall be in the form of a cost profile over a rolling 5-year period, showing the yearly prediction for each asset and with totals per year and a final total for the whole portfolio	• The lifecycle plan shall be accurate and reflective of the expenditure required in order to fulfil the needs of the contract as far as can reasonably be predicted	• Asset failure rates and maintenance & repair costs incurred against specific assets are tracked and can be reported on in order to reconcile actual costs against those predicted in the lifecycle plan
		Asset Replacement	• Asset replacement is facilitated in order to comply with any lease hand-back requirements	• The lifecycle plan shall be accurate and reflective of the expenditure required in order to fulfil the needs of any leases as far as can be predicted	• Asset failure rates and maintenance & repair costs incurred against specific assets is tracked and can be reported on in order to reconcile actual costs against those predicted with the lifecycle plan
[5] Preventive Maintenance Services	M&E	Maintenance Plan	• To compile and maintain a comprehensive maintenance plan for all relevant plant and equipment that will be optimal in terms of reducing risk and whole life costs of plan operation and replacement whilst meeting the service agreement with FM department and Building	• The maintenance plan will pay due consideration to statutory compliance, business criticality, condition, available redundancy and expected failure associated with the equipment and will minimise the risk associated with unavailability	• Quarterly Compliance Audit • Performance Review

			Occupiers and all statutory compliances	• The maintenance regime will take cognisance of premises' lease requirements, client's property strategy and business plan to ensure that assets are being maintained in the most cost effective manner while mitigating reasonably foreseeable risks	• Quarterly Compliance Audit
				• The maintenance regime will be intelligently optimised to ensure that the most appropriate maintenance techniques are utilised at all times e.g. planned, business centred, opportunistic, run to failure	• Quarterly Compliance Audit
		Maximum Service Operation	• To operate the services so that availability is maximised	• Unavailability is minimised due to plant failure	• Monthly performance report
				• Maintenance tasks are planned in a manner that will minimise disruption to customers' core business	• Quarterly Compliance Audit
				• Where no extra capability is available on a critical item of plant, the supplier must comply with client's IT change control procedure	• Quarterly Compliance Audit
				• Performance of tasks planned vs. tasks undertaken on time is monitored and reported	• Monthly performance report
		Improve Maintenance Plan	• To intelligently improve maintenance plan to fine tune the lifecycle plan utilising the information gathered during the performance of the services	• The maintenance and lifecycle plans will be regularly updated in order to improve them. • MI will be utilised to facilitate this e.g. the outcome of maintenance activities and the analysis of failure rates	• Quarterly Compliance Audit

	Fabric	Elements Inspection	• To regularly inspect the major elements of the premises using an agreed checklist to ensure that the fabrics is in keeping with the type of premises	• A checklist is agreed for each premises and a regular condition survey is performed at an agreed frequency. • Any defects found are either remediated if they fall under the reactive budget or applications for funding are put forward for consideration by the client (PO or Lifecycle Plan as required)	• Monthly Performance Report
	Finishes	Elements Inspection	• To regularly inspect the premises using an agreed checklist to ensure that the aesthetics are in keeping with the type of premises	• A checklist is agreed for each premises and a regular aesthetic walk round is performed at an agreed frequency. Any defects found are either remediated if they fall under the reactive budget or applications for funding are put forward for consideration by the client (PO or Lifecycle Plan as required)	• Monthly Performance Report
[6] Reactive Maintenance Services	M&E	Performance Standard	• To regularly operate the service so that reactive performance standards are met. This standard is related to the reactive works communicated via FM Helpdesk and via the undertaking of other services e.g. preventive maintenance, informal observations	• Performance of tasks planned vs. tasks undertaken on time is monitored and reported	• Monthly Performance Report
		Minimise Disruption	• Reactive tasks are planned in a manner that will minimise disruption to customer's core business	• 90% compliant and corrective actions addressed within agreed target dates	• Quarterly Compliance Audit

	Fabric	Performance Standard	• To regularly operate the service so that reactive performance standards are met. This standard is related to the reactive works communicated via FM Helpdesk and via the undertaking of other services e.g. preventive maintenance, informal observations of any faults/damage	• Performance of tasks planned vs. tasks undertaken on time is monitored and reported	• Monthly Performance Report
		Maximise Service Availability	• To operate the service so that availability is maximised	• Tasks are planned in a manner that will minimise disruption to customer's core business	• Quarterly compliance Audit
	Finishes	Finishes Standard	• To repair and/or re-finish surfaces such as carpets, flooring and walls as needed to meet specified standards i.e. to cover unsightly defects	• Performance of tasks planned vs. tasks undertaken on time is monitored and reported	• Monthly performance report
		Maximise Service Availability	• To operate the service so that availability is maximised	• Tasks are planned in a manner that will minimise disruption to customer's core business	• Quarterly compliance Audit
	General Work	Schedules	• All maintenance work must be carried out according to schedules and only emergency works or works that are not obtrusive can be carried out during the day	No of compliant checks / No of checks per month Sample size 100% per month Performance Tolerance: 0%	• Monthly: Measured using departmental checklists. Monitored by weekly recorded random checks by managers and supervisors. 4 random checks per month
		Work Permit	• All works must be authorised by the FM department and must obtain permits respectively	No of compliant checks / No of checks per month Sample size 100% per month Performance Tolerance: 0%	• Monthly: Measured using departmental checklists. Monitored by weekly-recorded random checks by managers and supervisors. 4 random checks per month

[7] Statutory Inspection	Liaison, Escorting	Inspection Preparation	• To enable the inspections to be safely undertaken and to facilitate the inspection of any internal parts as specified within any written scheme of examination	• Performance of tasks planned vs. tasks undertaken on time is monitored and reported	• Monthly performance report
	In-Service Inspection and Testing of Electrical Equipment (PAT Testing)	Asset Register	• To compile and maintain a detailed asset register of all such equipment and to specify the correct frequency for in-service inspection and testing based on equipment type and environment of use	• Performance of tasks planned vs. tasks undertaken on time is monitored and reported	• Monthly performance report
		Testing Requirement	• The supplier is to allow for the testing of up to 4000 appliances p.a. within their price, in accordance with the statutory requirements (4000 appliances x 1 test p.a. = 4000 tests). In addition, the supplier will provide a unit rate for PAT Tests exceeding the 4000 no p.a.	• Performance of tasks planned vs. tasks undertaken on time is monitored and reported	• Monthly performance report
		Maintenance Service	• To intelligently improve the maintenance utilising the information gathered during the performance of the services	• The maintenance plan will be regularly updated in order to improve them. MI will be utilised to facilitate this i.e the outcome of maintenance activities and the analysis of failure rates	• Quarterly Compliance Audit
	Conduct	Standards	• Inspection, test or maintenance activity being carried out in accordance with quality procedure • Inspection, test or maintenance activity being carried out by the end of the respective grace period • Inspection, test or maintenance activity being carried out with prior notification to the authority	• All tasks are planned in accordance with the procedures	• Quarterly compliance Audit

ADDITIONAL FOR HEALTHCARE					
[1] Maintenance	Medical Gas, Vacuum and Anaesthetics Gas Scavenging System	Supply & Maintenance	• Piped medical gases, vacuum and anaesthetic gas scavenging systems are maintained in line with HTM Guidance Notes, good practice and legislation	No of compliant inspections per week / No of inspections per week Representative Random Sample Size	• Weekly: Measured and monitored using departmental checklist
			• Pathology gas systems are maintained in line with HTM Guidance Notes, good practice and legislation	No of compliant inspections per week / No of inspections per week Representative Random Sample Size	• Weekly: Measured and monitored using departmental checklist
			• A continuous supply of medical gases is ensured at all times	No of compliant inspections per week / No of inspections per week Representative Random Sample Size	• Consistent/Weekly monitoring
	Sterilising & Disinfecting Equipment	Standard Guidelines & Safety Operations	• All sterilisers and disinfecting equipment are maintained in line with HTM Guidance Notes and good practice	No of compliant inspections per week / No of inspections per week Representative Random Sample Size	• Weekly: Measured and monitored using departmental checklist
			• Machines are checked and certified as working to required HTM standards and safe to operate	No of compliant checks per day / No of checks per day Representative Random Sample Size	• Daily: Measured and monitored using the statutory log book
	Breakdowns and Defects	Responses	• Emergency breakdown must be responded to in the agreed time and then made safe	• Service Response Time: 30 mins	• Consistent/Weekly monitoring
			• Emergency breakdown must be responded to in the agreed time and then made safe	• Service Response Time: 1 hour	• Consistent/Weekly monitoring
			• Routine repairs must be responded to in the agreed time and then made safe	• Service Response Time: 12 hours	• Consistent/Weekly monitoring

		Repair Timescales	• All final repairs must adhere to the agreed timescales.	Timescales for guidance: • Emergency: 2 hours • Urgent: 4 hours • Routine: 72 hours • Wants or repair: 7 days	• Service Response Time: As per categorisation • Monitoring as per categorisation

TECHNICAL	[T2] BUILDING ENVIRONMENT				
Parameters	Metrics	Indicators	Attributes	Formula/Target	Monitoring
[1] Building Comfort	Temperature	Air Temperature	• Air temperature lies within acceptable range	Warm Period: • Acceptable Range: 26^0-28^0C. • Unacceptable Range: >26^0-28^0C Cold Period: • Acceptable Range: 20^0-24^0C. • Unacceptable Range: >24^0-26^0C	• Weekly/Monthly: Measured and monitored using departmental checklist
	Humidity	Relative Humidity	• Relative humidity percentage within acceptable range	Warm Period: • Acceptable Range: 40-60% • Unacceptable Range: >60-70% Cold Period: • Acceptable Range: Max 60% • Unacceptable Range: >60-70%	• Weekly/Monthly: Measured and monitored using departmental checklist
	Air Flow and Quality	• Air Velocity • Fresh Air Supply Rate • Carbon Dioxide Level • Volatiles Level • Dust Particles Level	• Annual measurement of air flow and quality must show results within acceptable range	• Acceptable Range: 0.1-0.25 m/s • Unacceptable Range: >0.25-0.3 m/s	• Weekly/Monthly: Measured and monitored using departmental checklist
	Acoustics	Noise Level	• Annual measurement of noise level must show results within acceptable range	• Acceptable Range: NR 30-40 • Unacceptable Range: >NR 40-45	• Weekly/Monthly: Measured and monitored using departmental checklist

	Lighting	Light Intensity	• Annual measurement of light intensity must show results within acceptable range	• Acceptable Range: 300 – 650 Lux • Unacceptable Range: >650 – 700 Lux	• Weekly/Monthly: Measured and monitored using departmental checklist

TECHNICAL	[T3] SPECIALIST SYSTEM				
Parameters	Metrics	Indicators	Attributes	Formula/Target	Monitoring
[1] Building Management System	Servicing & Testing	Function	• Test must demonstrate that the installed mechanical system is functioning or an acceptable alternative system or mechanism is in place	No of compliant random checks / No of random checks per month Sample size: 100% per month Performance Tolerance: 10%	• Monthly: Measured using checklist. Monitored by regular, recorded random checks. Compliance with relevant guidelines. 4 random checks per month
[2] Fire Detection, Suppression and Alarm System	Servicing & Testing	Function	• Test must demonstrate that the installed mechanical system is functioning or an acceptable alternative system or mechanism is in place	No of compliant random checks / No of random checks per month Sample size: 100% per month Performance Tolerance: 10%	• Monthly: Measured using checklist. Monitored by regular, recorded random checks. Compliance with relevant guidelines. 4 random checks per month
		Specified Frequency	• Servicing and testing of fire alarm system are carried out as per specified frequency	No of compliant random checks / No of random checks per month Sample size: 100% per month Performance Tolerance: 10%	• Monthly: Measured using checklist. Monitored by regular, recorded random checks. 4 random checks per month
	Temperature Monitoring	Maintenance	• Temperature monitoring and failure of alarm systems are correctly maintained and accurate	No of compliant random checks / No of random checks per month Sample size: 100% per month Performance Tolerance: 10%	• Monthly: Measured using checklist. Monitored by regular, recorded random checks. 4 random checks per month
	Fire Escape	Clearance	• Fire escape routes and doors must be clear of any obstructions and well lit at all times	No of compliant inspections per month / No of inspections per month	• Monthly: Measured and monitored using Rolling Building Audit
		Operational	• Fire doors must be kept closed and operational at all times	No of compliant inspections per month / No of inspections per month	• Monthly: Measured and monitored using Rolling Building Audit
	Fire Extinguishers	Provision	• Fire extinguishers are in place, accessible and not discharged	No of compliant inspections per month / No of inspections per month	• Monthly: Measured and monitored using Rolling Building Audit

	Combustibles	Storage	• Combustibles are stored in containers away from the building	No of compliant inspections per month / No of inspections per month	• Monthly: Measured and monitored using Rolling Building Audit
	Hazards	Exposure	• No electrical hazards are exposed to the live terminals	No of compliant inspections per month / No of inspections per month	• Monthly: Measured and monitored using Rolling Building Audit
[3] Public Address System	Servicing & Testing	Function	• Test must demonstrate that the installed mechanical system is functioning or an acceptable alternative system or mechanism is in place	No of compliant random checks / No of random checks per month Sample size: 100% per month Performance Tolerance: 10%	• Monthly: Measured using checklist. Monitored by regular, recorded random checks. Compliance with relevant guidelines. 4 random checks per month
[4] Security System	Servicing & Testing	Function	• Test must demonstrate that the installed mechanical system is functioning or an acceptable alternative system or mechanism is in place	No of compliant random checks / No of random checks per month Sample size: 100% per month Performance Tolerance: 10%	• Monthly: Measured using checklist. Monitored by regular, recorded random checks. Compliance with relevant guidelines. 4 random checks per month

TECHNICAL	[T4] UTILITY/ENERGY MANAGEMENT				
Parameters	Metrics	Indicators	Attributes	Formula/Target	Monitoring
[1] Procurement & Invoicing	Procurement Policy	Process Improvement	• Review the current utility procurement policy and establish whether the process can be improved upon	• Review to be carried out within 6 months of the contract commencement date	• Review exists and is reflective of industry position
	Invoices	Metering Parameters	• Invoices to be checked against historical metering information and supplier's parameters will also be checked against actual requirements	• Invoices validated within 1 month of issue to the supplier	• Validation exists and is accurate
	Metering	Consumption Validation	• Invoice metering validation via a data collection regime either through automatic or manual meter reading so that consumption is reported and invoices are checked against actual consumption	• Invoices validated within 1 month of issue to the supplier	• Validation exists and is accurate
		Implementation of CRC	• Carbon reduction compliance (CRC) through the use of automatic or manual meter readings and invoices	• Consumption data is collected into a suitable format for CRC reporting requirements and issued on time	• Reports exist and are adequate for purpose
[2] Site Work	Site Surveys	Plant Strategies' Knowledge	• Site surveys will be performed so that an understanding of the buildings' and plant strategies can be understood	• The consumption will be broken into component parts and an action plan will be established	• Reports exist and are adequate for purpose
[3] System Balance & Efficiency	Control Systems	Optimal Efficiency	• To ensure that the primary and control systems provided within the premises are operated and developed optimally so that the plant is as energy efficient as possible within the confines of their design	• The agreed reduction in consumption can be evidenced within the agreed timescales	• Monthly performance report
	Energy Balance	Service Balance	• Energy champions would be appointed on site to ensure that the correct balance between service delivery and utilities' consumption can be maintained	• Regime to be implemented that can be verified physically	• Quarterly Compliance Audit

	Energy Efficiency	Efficient Equipment & Methods	• To input to the development of maintenance and lifecycle strategies to ensure that the most energy efficient equipment is specified and the most energy efficient means are used on the contract	• The agreed reduction in consumption can be evidenced within the agreed timescales	• Monthly performance report

TECHNICAL	[T5] WASTE MANAGEMENT				
Parameters	Metrics	Indicators	Attributes	Formula/Target	Monitoring
[1] System Procedural	H&S Risk	Procedural Compliance	• Eliminate any risk to people coming into contact with any H&S risk	Priority target for problems with: • Urgent Priority: 1 Core Hour in Core Hour Areas, 1 hour in 24 Hour Areas	• Monthly: Maintenance Schedule Logs and Monthly Performance Report
	Client's Requirement	Work Specification	• Waste management system is conducted in compliance with the statutory requirements • All waste management process are based on the agreed requirement, targets and timeline • Waste is to be removed from site at regular intervals to avoid any unsightly accumulations or mal odours • Records are maintained of all transactions associated with waste disposal	No of compliant inspections per month / No of inspections per month	• Monthly: Measured and monitored using Maintenance Schedule Logs and Monthly Performance Report
	Transporting Equipment	Maintain Cleanliness	• All equipment used to transport waste to be steam cleaned daily	No. of compliant random checks / No. of random checks per month Performance tolerance: 0%	• Daily: Using departmental checklist. • 4 Random checks/month by managers/supervisors:
	Staffing	Procedure	• Staff apply the procedure for accidental spillage	• Determined by default. • Performance tolerance: 5%	• Determined by default: Measured and monitored using Helpdesk Log
		Training	• All staff are trained in the handling and correct disposal of waste	No. of compliant staff training records / No. of staff in sample Sample size: 10% per month Performance tolerance: 5%	• Monthly: using departmental checklist. Data from training records. • Monitored by managers through documentation inspection
		Reporting	• Reporting of non-compliant waste disposal in order that corrective action can be implemented	• Determined by default. • Performance tolerance: 5%	• Determined by default: Measured and monitored using Helpdesk Log

[2] Service Process	Segregation	Designated Storage	• All waste us kept in designated areas	No. of compliant random checks / No. of random checks per month Performance tolerance: 5%	• Weekly: using departmental checklist • 4 random checks/month by supervisor and manager
		Cleanliness	• All waste storage areas are free from loose debris and in a clean condition	No. of compliant random checks / No. of random checks per month Performance tolerance: 5%	• Weekly: using departmental checklist • 4 random checks/month by supervisor and manager
	Collection	Specified Schedule	• Waste is collected from designated points at specified collection times and tagged in accordance with hospital policy. The security of waste disposal during collection will be assured	No. of compliant random checks / No. of random checks per month Performance tolerance: 5% Collection Target: • Collections within 24 hours of scheduled.	• Weekly: using departmental checklist • 4 random checks/month by supervisor and manager
		Collection Time	• Both general and special wastes are removed from designated collection points within the agreed collection times	No. of compliant requests / No. of requests per month Sample size: 100% Performance tolerance: 10% Collection Target: • All waste: within the 2 hours of collection times • Confidential, special and hazardous wastes: within 1 hour of request	• Weekly: using Helpdesk Log
	Handling	Receptacles Cleanliness	• Receptacles are neither full, leaking or the source of unpleasant odours emanating out of designated waste storage areas • Receptacles have been emptied in accordance with planned collection time	No. of compliant random checks / No. of random checks per month Performance tolerance: 5%	• Weekly: using departmental checklist • 4 random checks/month by supervisor and manager

		Planned Schedule	• 90% of all planned waste disposal completed according to plan • 90% of all planned recycling visits completed to plan	No. of compliant random checks / No. of random checks per month Performance tolerance: 5%	• Weekly: using departmental checklist • 4 random checks/month by supervisor and manager
		Maintain Records	• Records of traceable tag allocation will be maintained	No. of compliant random checks / No. of random checks per month Performance tolerance: 0%	• Daily: using departmental checklist • 4 random checks/month by supervisor and manager
	Tagging	Types of Waste	• All general and special waste bags will be tagged at point of collection	No. of compliant random checks / No. of random checks per month Performance tolerance: 0%	• Daily: using departmental checklist • 4 random checks/month by supervisor and manager
		Protective Clothing	• Staff wear protective clothing at all times whilst handling waste	No. of compliant random checks / No. of random checks per month Performance tolerance: 5%	• Monthly: using departmental checklist • 4 random checks/month by supervisor and manager
	Disposal	Legislation Compliance	• Full compliance with waste disposal legislation and any general and relevant guidelines	No of compliant inspections per month / No of inspections per month	• Monthly: Measured and monitored using Maintenance Schedule Logs and Monthly Performance Report
		Incineration Regulations	• FM department is informed and updated of the full names and addresses of the sites to be used for incineration in accordance with the law	• Status: Pass/Fail. • Performance tolerance: 10%	• Measured by monthly written reports being rendered to the FM department of the sites used.
	Transportation	Vehicles	• Clinical waste is transported in purpose-built vehicles	No. of compliant random checks / No. of random checks per month Performance tolerance: 0%	• Monthly: using departmental checklist • 4 random checks/month by supervisor and manager
		Compliance	• Segregated Household Waste and Clinical Waste are transported to secure receiving point in a safe manner in compliance with relevant	Non compliant incidents / Total scheduled number of movements	• Monthly: using departmental checklist • 4 random checks/ month by supervisor and manager

			legislation		
		Records	• Appropriate record is kept with the vehicle for inspection at all times in the event of spillage or other accidents	No. of compliant random checks / No. of random checks per month Performance tolerance: 0%	• Monthly: using departmental checklist • 4 random checks/ month by supervisor and manager
	Recycling	Implementation	• Recycling is implemented when possible and no environment incidents could occur	No. of compliant random checks / No. of random checks per month Performance tolerance: 5%	• Monthly: using departmental checklist • 4 random checks/month by supervisor and manager

TECHNICAL	[T6] SPACE PLANNING				
Parameters	Metrics	Indicators	Attributes	Formula/Target	Monitoring
[1] Major Reorganisations	Relocation	Appropriately Allocated	• Each individual is located within the appropriate functional area unless previously agreed with the client	Non compliant incidents / Total scheduled number of movements	• Monthly: Monthly Performance Report
		Security Requirements	• The process meets the client's security and adjacency requirements, unless previously agreed with the client	Non compliant incidents / Total scheduled number of movements	• Monthly: Monthly Performance Report
		Items' Safety	• Nil incidence of any belongings of an individual being lost or misdirected during a move	Non compliant incidents / Total scheduled number of movements	• Monthly: Monthly Performance Report
	Procedure	Adherence	• To adhere to the move plans with individual Directorates and obtain signoff from client's representative	Non compliant incidents / Total scheduled number of movements	• Monthly: Monthly Performance Report
		Client's Updates	• Client's representative is updated on the details of moves of an individual in order to update the client information system i.e Office Directory	Non compliant incidents / Total scheduled number of movements	• Monthly: Monthly Performance Report
		Coordination	• Co-ordination with the CIS contractor or supplier is done to conduct reconfigurations in a timely and correct way	Non compliant incidents / Total scheduled number of movements	• Monthly: Monthly Performance Report
	Process	Implementation	• Contractor must implement the move of an individual on the planned time and date, unless 24 hours' notice has been given to take effect	Non compliant incidents / Total scheduled number of movements	• Monthly: Monthly Performance Report

		Move Hours	• The moves of an individual and possessions must not take place during normal working hours	Non compliant incidents / Total scheduled number of movements	• Monthly: Monthly Performance Report
		Nil Interference	• The moves of an individual and possessions must not interfere with the ability of anyone to work an eight-hour day, unless previously advised and agreed with the authority	Non compliant incidents / Total scheduled number of movements	• Monthly: Monthly Performance Report
		Handling Requirements	• Any classified documents that were required to be moved for an individual must be handled in accordance with the client's requirement	Non compliant incidents / Total scheduled number of movements	• Monthly: Monthly Performance Report
	Setting	Specified Arrangements	• Nil incidence of failure to move furniture and match new or replacement furniture with original specification where applicable unless previously agreed with the client	Non compliant incidents / Total scheduled number of movements	• Monthly: Monthly Performance Report
[2] Reconfiguration	Output Specifications	Space Arrangements	• To add or reduce work spaces in accordance with the output specification of the agreement, unless previously agreed with the client	Non compliant incidents / Total scheduled number of movements	• Monthly: Monthly Performance Report
		Furniture Setting	• Nil incidence of failure to move furniture and match new or replacement furniture with original specification unless previously agreed with the client	Non compliant incidents / Total scheduled number of movements	• Monthly: Monthly Performance Report
		Optimal Usage	• Nil incidence of the contractor's failure to implement actions agreed with the authority to optimise use of the accommodation within the agreed timescale	Non compliant incidents / Total scheduled number of movements	• Monthly: Monthly Performance Report

TECHNICAL	[T7] SECURITY				
Parameters	Metrics	Indicators	Attributes	Formula/Target	Monitoring
[1] Management	Quality, Environment, H&S and Training	Integrated Management System (IMS)	• A comprehensive IMS is implemented across all services provided under the contract and maintained in order to remain current in terms of statutory compliance	• The IMS encompasses the legal requirements in order to successfully deliver each of the agreed services	• Quarterly Compliance Audit, External verification audits i.e ISO
				• All employees engaged on the contract understand their role in operating the IMS	• Quarterly Compliance Audit
				• The supplier informs client of any change in legislation or their proposals to ensure compliance	• Changes in legislation & proposals and the cost associated are communicated in a timely and accurate manner
		Maintenance Records	• Records are held in order to evidence that the system has been fully implemented and maintained	• The records held within the IMS are comprehensive, current and up-to-date	• Annual supplier internal and Annual Quarterly Compliance Audits
		Quality Programmes	• The supplier will contribute as required to the retention and upkeep of certifications and associated programmes, e.g., ISO 9001, ISO 14001, etc	• The requirements of the standards in compliance with the related bodies are met at all times	• Surveillance audits
	Continuous Improvement and Added Value	Regular Meetings	• Participation in regular contract review meetings	• Open and honest dialogue with a view to flushing out challenges and putting forward ideas for improvement	• Regular review meetings take place that are constructive, meaningful and documented
		Internal Initiatives	• Generation of internal initiatives to improve the service and add value to its stakeholder, customers and consumers	• Evidence must exist to show that opportunities have been made available, e.g., minutes of meetings, consultation documents, initiatives, etc	• Quarterly Compliance Audit
		Conducive Environment	• An environment of autonomy, openness, consultation, honesty and willingness to learn and improve	• Evidence must exist to show that opportunities have been made available, e.g., minutes of meetings, consultation documents, initiatives, etc	• Quarterly Compliance Audit

		Employees' Performance	• Each employee must be challenged and developed in order to improve performance	• Each employee must participate in a suitable continuing professional development programme	• Annual supplier internal and Annual Quarterly Compliance Audits
		Complaint Procedures	• Maintain procedures to actively solicit, record and resolve all complaints or compliments by stakeholders. Notify clients of all complaints and compliments, along with actions taken	• To keep records of all complaints or compliments and actively use the records to improve the service	• Monthly performance report
	Accreditation & Training	Trained Guards	• Ensure that all security guards remain SIA accredited and trained	• Evidence must be available to confirm that audit checks are being carried out	• Quarterly Compliance Audit
	Operational Service Delivery (In-house and supply chain)	Procurement	• Communication with FM department on matters relating to contract	• Attendance at contractual meetings and timely response to ad hoc requests for meetings and to other communications	• Quarterly Compliance Audit
		Supervision & Monitoring	• A system is to be implemented for regular inspection on a sampling basis of all works carried out under the contract	• Monitoring is carried out on a minimum of 10% of all works and the monitoring is documented	• Quarterly Compliance Audit
	Management of Emergency, Disaster Planning and Business Continuity Issues	Add Value Process	• To assist FM department and add value to the process	• Attendance at meetings as required and timely response to ad hoc requests for meetings and to other communications	• Quarterly Compliance Audit • Performance review after incident report submitted
		Ad-hoc Request	• Staff respond within 5 minutes to ad-hoc requests from FM Department staff who feel threatened by any situation or consider security service action or attendance to be necessary	No of compliant responses / Total number of logged requests per month Sample size: 100% Performance Tolerance: 10%	• Weekly: Measured and monitored using the Helpdesk log
	Provision of Operational Management & Suitable In-	Competency	• The required competencies and compliments are available at all agreed times in order to fulfil the contractual requirements	• No failure to provide	• Spot checks by FM department

	House Labour	Standards	• Employees observe acceptable standards of personal hygiene, courtesy and consideration at all times	• No failure to provide	• Spot checks by FM department
		Appropriate Clothing	• Employees wear appropriate uniforms including personal protective clothing and identity in providing the service or undertaking works	• No failure to provide	• Spot checks by FM department
	Commercial Management of In-House and Supply Chain Activities to Ensure Value for Money	Money Value	• Value for money to be obtained at all times and for all activities (sub-contract arrangements, procurement of materials, etc)	• Sound supply chain and best buy processes to be in place, implemented and fully demonstrated at all times	• Quarterly Compliance Audit, Spot checks and External Quality Service Audits all by FM department
		Controlled Expenditures	• Budgets are not exceeded and all expenditures can be adequately justified and defended if challenged	• Commercial records are auditable and up-to-date; budget expenditure is tracked over time and appropriately managed	• Quarterly Compliance Audit, Spot checks and External Quality Service Audits all by FM department
	Administration and Upkeep of All Service Systems, Documents & Records	Service Records	• All records that are required in order to evidence the services are complete, locatable and up-to-date at all times	• The documents are filed and updated to reflect the current situation at all times	• Quarterly Compliance Audit
		Asset Register	• A detailed asset register exists that records the asset details and the specification and frequency of any planned maintenance tasks	• The documents are filed and updated to reflect the current situation at all times	• Quarterly Compliance Audit
		Document Control	• Current and future reference/ controlled documents are maintained	• The documents are securely retained and updated to reflect the current situation at all times	• Quarterly Compliance Audit
	Contact/ Liaison	Contacts Register	• All security resources/contact available to FM Department staff for response or assistance for security have been communicated to the FM Department Security Advisor	• Quarterly: a list of contacts made available to FM Department Security Advisor: Pass/Fail • Performance Tolerance: 5%	• Quarterly: Measured using departmental checklist. Data from FM Department confirmation of compliance. Monitored by security manager through documentation inspection

		Approved Protocol	• Staff observe the FM Department's approved protocol for contact and liaison with the police, as detailed in the FM Department's Security Policy	• Compliance over number of incidents when police are contacted, per month: Pass/Fail • Performance Tolerance: 5%	• Monthly: Measured using departmental checklist. Monitored by security manager through documentation inspection
	Provision of Management Information (MI) for monthly reports	Comprehensive MI	• Gathering and preparing comprehensive MI relating to the delivery of the contractual services	• The MI must be formatted in the agreed manner, comprehensive, accurate and communicated in a timely manner	• No failure to produce MI by the agreed submission date
	FM Helpdesk Interface	Interface Arrangements	• Liaise effectively with FM Helpdesk and on-site teams on all reactive works	• Communicate effectively on work issued and completed, including any delays in completing work within agreed timescales	• Monthly performance report
	Security Systems, Alarms & Controls	Response Monitoring	• All security systems, alarms and controls are monitored and responded to within specified response times	No of appropriate responses / Total number of recorded incidents per month Sample size: 40% Performance Tolerance: 5%	• Weekly: Measured using departmental checklist. Data from the Incident Report Book. Monitored by security manager through documentation inspection
	CAFM System in Operation and Administration	Participation	• Liaise effectively with FM Helpdesk and on-site teams on all reactive works	• The information communicated to the CAFM administrators is relevant, accurate and up-to-date and communicated in a timely manner	• Monthly performance report
[2] Operations	CCTV Monitoring & Operation	Policies & Procedures	• To ensure that the on-site CCTV policies & procedures and the associated assignment instructions are kept up-to-date at all times	• The procedures adequately reflect the requirements of the Data Protection Act, CCTV code of practice and also any customer policies, etc	• Quarterly Compliance Audit
		Trained Operators	• All CCTV operators are to be adequately trained at all times	• The operators' training records are complete, available and up-to-date	• Quarterly Compliance Audit
		Code of Practice	• To comply with the Data Protection Act and also the CCTV policy and code of practice	• Records are available as required in order to comply with the policy and code of practice	• Quarterly Compliance Audit

	Fire Alarm Monitoring & Response	Policies & Procedures	• To ensure that the on-site fire alarm policies & procedures and the associated assignment instructions are kept up-to-date at all times	• The procedures adequately reflect the requirements of any customer policies, etc	• Quarterly Compliance Audit
		Alarm Operators	• All security guards are to be adequately trained to monitor and operate alarm at all times	• The operators' training records are complete, available and up-to-date	• Quarterly Compliance Audit
		Maintain Records	• Records of any activation, false alarms, drills etc are kept up-to-date	• Records are available as required in order to comply with the policy and code of practice	• Quarterly Compliance Audit
	Intruder Alarm Monitoring & Response	Policies & Procedures	• To ensure that the on-site fire alarm policies & procedures and the associated assignment instructions are kept up-to-date at all times	• The procedures adequately reflect the requirements of any customer policies, etc	• Quarterly Compliance Audit
		Alarm Operators	• All security guards are to be adequately trained to monitor and operate alarm at all times	• The operators' training records are complete, available and up-to-date	• Quarterly Compliance Audit
		Maintain Records	• Records of any activation, false alarms, drills etc are kept up-to-date	• Records are available as required in order to comply with the policy and code of practice	• Quarterly Compliance Audit
	Incident Procedures	Updated Records	• Details of all incidents are recorded on incident report forms provided by the supplier and submitted on a daily basis to the FM Department Security Advisor or her/his deputies	• Compliant reports over total reported incidents per month: Pass/Fail • Performance Tolerance: 10%	• Weekly: Measured using departmental checklist. Data from the Incident Report Book and Incident Report Forms. Monitored by security manager through documentation inspection
		Incident Reporting	• Staff follow appropriate action and reporting procedures with regard to observed/identified incidents of vehicle thefts, theft from vehicles, damage, vandalism or suspected intruders on the Car Parking and Security Site	$\frac{\text{No of accidents actioned}}{\text{Total number of recorded incidents per month}}$ Sample size: 40% Performance tolerance: 10%	• Weekly: Measured using departmental checklist. Data from the Incident Report Book. Monitored by security manager through documentation inspection

	Key Holding & Emergency Access	Lock Changing	• Lock changing and security not to be prejudiced by the loss of keys	• All instances are reported immediately to the Helpdesk • Appropriate workarounds/ temporary measures are taken to ensure security of the premises whilst necessary permanent remedial works can be undertaken	• Monthly performance report
		Key Management	• Availability of keys to all authorised persons subject to replacement within 48 hours of loss	• Monthly performance report	• Monthly performance report
			• All keys to designated areas are held in secure facilities	• Any occasions per month when key safes left opened and unattended. • Performance Tolerance: 5%	• Determined by Default: Measured and monitored using departmental checklist. Data derived using key logs
		Key Holding	• Strict control in exercises in the issue, recording and return of keys	No of compliant key issues/returns No of key issues/returns Sample size: 40% Performance tolerance: 5%	• Weekly: Measured and monitored using departmental checklist. Data derived using key logs
			• Emergency key holding services are available 24/7 for the prescribed premises	• Emergency Response Time are met at all times	• Monthly performance report
	Void Property Instructions	Requirements	• Void property instructions organised and carried out in conjunction with requirements and frequency set out by FM department	• Inspection reports available to verify checks and visits	• Monthly performance report
	Procurement of security related consumables	Consumable Control	• A list of consumables will be agreed and the stock levels controlled at an agreed level	• The agreed list is available and the stock levels are maintained	• Quarterly Compliance Audit
	Staff Patrolling	Presence	• Staff maintain a high profile presence and visible attendance in and around the Security Site	Percentage of completed security tours Scheduled tours per month Sample size: 100%	• Weekly: Measured and monitored using departmental checklist. Data using pre-determined electronic

				Performance tolerance: 15%	checkpoints
		Control points	• All control points are routinely patrolled and monitored to ensure security compliance	Number of compliant patrols / Total number of scheduled patrols per month Sample size: 100% Performance tolerance: 5%	• Weekly: Measured and monitored using departmental checklist. Data using pre-determined electronic checkpoints
	Control of Contractors	Escort Service	• Ensure contractors sign in and out of the premises and escort them where necessary	• All contractors must be signed in	• Quarterly Compliance Audit
		Maintain Log	• Keep the contractors' log updated	• The log is up-to-date at all times	• Quarterly Compliance Audit
		Authorised Passes	• Issue contractor passes for authorised access to the building	• The log is up-to-date at all times and no contractor is found in the premises without a visibly displayed pass	• Quarterly Compliance Audit

TECHNICAL	[T8] CLEANING				
Parameters	Metrics	Indicators	Attributes	Formula/Target	Monitoring
[1] Work Guidelines	Staffing	Availability	• Individual staff are consistently allocated to work on a specific floor or department with justified changes	No of compliant records per month / No of records per month Sample size: 100% per month	• Daily/Weekly: Measured and monitored departmental checklists.
	Quality Control	Self Assessment	• Self assessment by supervisor spot checks and quality control at least 4 times per month	• No more than an average of 5 calls per site per month recorded by the Helpdesk must be as a result of poor or failed daily cleaning	• Weekly: Measured using checklists. Monitored by regular, recorded random checks. 4 random checks per month
	H&S	Signage	• Proper signage must be used during all cleaning works at all times	No of compliant random checks / No of random checks per month Sample size: 100% per month Performance Tolerance: 10%	• Weekly: Measured using checklists. Monitored by regular, recorded random checks. 4 random checks per month
[2] Cleaning Services	Schedules	Adherence	• All cleaning works must be carried as per schedule and any ad hoc requests must be attended within 30 minutes	No of compliant random checks / No of random checks per month Sample size: 100% per month Performance Tolerance: 10%	• Weekly: Measured using checklists. Monitored by regular, recorded random checks. 4 random checks per month
	Allocation	Work Arrangement	• Nominated staff are allocated to work on specific floor or department with minimal changes, taking account of the limitations caused by annual leave sickness and training	No of compliant occasions / No of occasions per month Sample size: 100% per week Performance Tolerance: 15%	• Daily/Weekly: Measured and monitored departmental checklists.
	Standards	Cleanliness	• All areas are kept clean in accordance with cleaning schedules	• Performance standards maintained at 90%	• Daily/Weekly: Measured and monitored departmental checklists.

			• Minimal accumulation of surface dust, no cobwebs or accumulation of waste	• Performance standards maintained at 90%	• Daily/Weekly: Measured and monitored departmental checklists.
			• No tide marks on walls	• Performance standards maintained at 90%	• Daily/Weekly: Measured and monitored departmental checklists.
	Access	Adherence	• Access times to specific areas are adhered to within scheduled times	No of compliant occasions / No of occasions per month Sample size: 100% per week Performance Tolerance: 10%	• Daily/Weekly: Measured and monitored departmental checklists.
[3] Equipment & Supply	Equipment	Provision	• Equipment as may at any time be necessary for the provision of domestic services is provided and maintained.	No of compliant pieces of equipment in sample / No of pieces of equipment and materials in sample Sample size 100% bi-annually Performance Tolerance: 5%	• Monthly: Measured and monitored using the equipment requirement and maintenance schedules. • All equipment will be logged, checked it is only being used in specified areas and maintenance record
		Appropriateness	• All cleaning works must use the appropriate equipment and materials to ensure the quality of building facilities and finishes are kept to the highest standard	No of compliant random checks / No of random checks per month Sample size: 100% per month Performance Tolerance: 10%	• Weekly: Measured using checklists. Monitored by regular, recorded random checks. 4 random checks per month
		Compliance	• Maintain cleaning equipment to comply with statutory and legislative requirements	• Full compliance with statutory requirements	• Monthly: Measured using checklist. Monitored by regular, recorded random checks. Compliance with relevant guidelines. 4 random checks per month

			• Equipment complies with the relevant standard specifications and codes of practice	No of compliant pieces of equipment in sample No of pieces of equipment in sample Sample size: 40% per month Performance Tolerance: 5%	• Monthly: Measured and monitored using the equipment requirement and maintenance schedules. • All equipment will be logged, checked to ensure it is only being used in specified areas and maintenance recorded
		Maintenance	• All equipment including trucks/tugs/trolleys are kept clean and maintained and services in accordance with manufacturer's specification	No of compliant pieces of equipment in sample No of pieces of equipment in sample Sample size: 10% per month Performance Tolerance: 5%	• Monthly: Measured and monitored by Estates department using the Planned preventive Maintenance System
		Classification	• Cleaning equipment is clearly defined for specific usage and correctly stored. All equipment is colour coded in line with national colour coding, to indicate specific areas of use	No of compliant pieces of equipment in sample No of pieces of equipment in sample Sample size: 40% per month Performance Tolerance: 5%	• Monthly: Measured and monitored using the equipment requirement and maintenance schedules. All equipment will be logged and maintenance record
		Storage	• All equipment and stacking items are correctly stored and arranged properly in a designated area to ensure that no materials could fall	No of compliant items in sample No of items in sample Sample size: 10% per month Performance Tolerance: 10%	• Weekly: Measured and monitored using the departmental checklist
			• Equipment used to clean in all units is kept exclusively for use in that area and not transferred. Rectification must include sterilising of equipment to point of origin	No of compliant occasions No of occasions per month Sample size: 10% per month Performance Tolerance: 5%	• Weekly: Measured and monitored using the departmental checklist
			• All hazardous materials and equipment must be stored in the designated areas	No of compliant items in sample No of items in sample Sample size: 10% per month Performance Tolerance: 0%	• Weekly: Measured and monitored using the departmental checklist

			• All void areas are properly secured, locked and boarded up	No of compliant random checks / No of random checks per month Sample size: 100% per month Performance Tolerance: 0%	• Monthly: Measured using checklist. Monitored by regular, recorded random checks. Guidelines. 4 random checks per month
	Supply	Quality	• Consumables (soaps, toilet tissues) should be to a quality agreed with the client and never out of stock	• Ensure that consumables are maintained at point of use of 100% of the time	• Monthly: Measured and monitored using the supervisor's Stock Level Checklist
		Disposables & Consumables	• Supplies of Disposables and Consumables are available to users at all times	No of compliant stock level checks / No of stock level checks per month Sample size: 100% per month Performance Tolerance: 5%	• Monthly: Measured and monitored using the supervisor's Stock Level Checklist
[4] Cleaning Materials	Provision	Supply	• All cleaning materials including dishwashing chemicals as may at any time be necessary are supplied and issued to the staff	No of compliant stock items / No of stock items Sample size: 10% per month Performance Tolerance: 10%	• Weekly: Measured and monitored using the departmental checklist
	Selection	Compliance	• Cleaning materials are selected so as not to cause any damage to surface. This is restricted to surfaces where the hospital is responsible for replacement	No of compliant random checks / No of random checks per month Sample size: 100% per month Performance Tolerance: 10%	• Monthly: Measured using checklist. Monitored by regular, recorded random checks. Compliance with and application of COSHH Guidelines. 4 random checks per month
	Procedures	Usage	• Cleaning materials are used in a proper manner, complying with COSHH regulations	No of compliant random checks / No of random checks per month Sample size: 100% per month Performance Tolerance: 0%	• Weekly: Measured using checklists. Monitored by regular, recorded random checks. 4 random checks per month
		Conformance	• All cleaning materials conform to the Client's Control of Infection Policy	No of compliant random checks / No of random checks per month Performance Tolerance: 0%	• Weekly: Measured using departmental checklists. Monitored by regular, recorded random checks. Compliance with the application of Control of Infection Policy. 4 random checks per month

		Schedules	• Cleaning procedures and schedules are in place and up-to-date	No of actual procedures and schedules in place / No of agreed procedures and schedules Sample size: 100% per 6 months Performance Tolerance: 10%	• Bi-annually: Measured and monitored using the departmental checklists.
	Storage	Designated Areas	• Equipment used in critical areas is kept exclusively for use in critical areas. Rectification must include sterilising of equipment to point of origin	No of compliant items in sample / No of items in sample Sample size: 100% per 6 months Performance Tolerance: 10%	• Bi-annually: Measured and monitored using the departmental checklists.
		COSHH	• Cleaning materials are stored in a safe and proper manner, complying with COSHH regulations	No of compliant random checks / No of random checks per month Sample size: 100% per month Performance Tolerance: 0%	• Weekly: Measured using checklists. Monitored by regular, recorded random checks. 4 random checks per month
	Disposal	Handling	• Disposable cleaning equipment and materials are discarded after use	No of compliant areas in sample / No of areas in sample Sample size: 10% per month Performance Tolerance: 5%	• Weekly: Measured using departmental checklists. Monitored by regular, recorded random checks. Compliance with the application of Control of Infection Policy. 4 random checks per month
[5] Control of Substances Hazardous to Health (COSHH)	Record	Provision	• Each site COSHH record is maintained at all times	• Full compliance with statutory requirements	• Weekly: Measured using checklists. Monitored by regular, recorded random checks. 4 random checks per month
[6] Interior Cleaning	Elements	• Floors • Walls • Doors • Paintwork	• All must be dry, free of any marks, visible dust, layers of dirt, film and smears, and have a uniform light-reflective, non-slip finish. Any new marks capable of being cleaned, debris, spillage and litter to be removed	• In accordance with Scheduled Cleaning Regime • Percentage from cleaning checklist • Sample size: 10% per week • Performance Tolerance: 5%	• Daily/Weekly: Measured and monitored using the Cleaning Checklist

		• Furniture • Finishes • Fittings & Fixtures • Structures	• All must be dry, free of any marks, visible dust, layers of dirt, film and smears. Any new marks capable of being cleaned, debris, spillage and litter to be removed	• In accordance with Scheduled Cleaning Regime • Percentage from cleaning checklist • Sample size: 10% per week • Performance Tolerance: 5%	• Daily/Weekly: Measured and monitored using the Cleaning Checklist
		• Entrances • Exits • Lift • Stair Environments	• All must be dry, free of any marks, visible dust, layers of dirt, film and smears, any new marks capable of being cleaned, debris and spillage, litter to be removed	• In accordance with Scheduled Cleaning Regime • Percentage from cleaning checklist • Sample size: 10% per week • Performance Tolerance: 5%	• Daily/Weekly: Measured and monitored using the Cleaning Checklist
		• Windows • Internal Glass • Panels • Partitions accessible without specialist access equipment)	• All must be dry, free of any marks, visible dust, layers of dirt, film and smears. Any new marks capable of being cleaned, debris and spillage, litter to be removed	• In accordance with Scheduled Cleaning Regime • Percentage from cleaning checklist • Sample size: 10% per week • Performance Tolerance: 10%	• Daily/Weekly: Measured and monitored using the Cleaning Checklist
		• Windows • Internal Glass • Panels • Partitions (inaccessible without specialist access equipment)	• All must be dry and not wet due to cleaning activities, free of any marks, visible dust, layers of dirt, film, marks and sticky deposits. Any new marks capable of being cleaned, debris and spillage, litter to be removed	• In accordance with Scheduled Cleaning Regime • Percentage from cleaning checklist • Sample size: 10% per week • Performance Tolerance: 10%	• Daily/Weekly: Measured and monitored using the Cleaning Checklist
		External Windows	• External windows are cleaned to a frequency commensurate with achieving a good overall appearance	$\frac{\text{No of compliant checks}}{\text{No of checks}}$ Performance Tolerance: 15%	• Daily/Weekly: Measured and monitored using the Cleaning Checklist
		• Toilets • Sanitary Disposal Unit • Showers • Changing Rooms	• All are free from dust, removable soil and stain on inside and outside surfaces. Taps, shower heads, overflows, outlets, chains and plugs are free from grease, scum, debris and deposits	• In accordance with Scheduled Cleaning Regime • Percentage from cleaning checklist • Sample size: 10% per week • Performance Tolerance: 5%	• Daily/Weekly: Measured and monitored using the Cleaning Checklist

		High and Low Level Surfaces	• High and low level surfaces are free from dust, cobwebs, removable soil, stains, grease, spots and splashes	• In accordance with Scheduled Cleaning Regime • Percentage from cleaning checklist • Sample size: 10% per week • Performance Tolerance: 5%	• Daily/Weekly: Measured and monitored using the Cleaning Checklist
		• Curtains, • Venetian, vertical and roller blinds	• All must be dry, free of any marks, visible dust, layers of dirt, film and smears. Any new marks capable of being cleaned including debris, spillage and litter need to be removed. Curtains are correctly hung, in good state of repair and free from all stains	• In accordance with Scheduled Cleaning Regime • Percentage from cleaning checklist • Sample size: 10% per week • Performance Tolerance: 15%	• Daily/Weekly: Measured and monitored using the Cleaning Checklist
		Grilles and kick plates	• All must be dry, free of any marks, visible dust, layers of dirt, film and smears, any new marks capable of being cleaned, debris and spillage, litter to be removed	• In accordance with Scheduled Cleaning Regime • Percentage from cleaning checklist • Sample size: 10% per week • Performance Tolerance: 10%	• Daily/Weekly: Measured and monitored using the Cleaning Checklist
		All types of refuse holders	• All must be dry and not wet due to cleaning activities, free from all debris, dust, removable stains, grease, spots and spillages on both inside and outside surfaces	• In accordance with Scheduled Cleaning Regime • Percentage from cleaning checklist • Sample size: 10% per week • Performance Tolerance: 5%	• Daily/Weekly: Measured and monitored using the Cleaning Checklist
		• Telephones • Office equipment and facilities	• All must be dry, free of any marks, visible dust, layers of dirt, film and smears, any new marks capable of being cleaned, debris and spillage, litter to be removed	• In accordance with Scheduled Cleaning Regime • Percentage from cleaning checklist • Sample size: 10% per week • Performance Tolerance: 5%	• Daily/Weekly: Measured and monitored using the Cleaning Checklist
		Kitchen Equipment	• All must be dry, free of any dust, removable soil, food deposits, and stains on inside and outside surfaces	• In accordance with Scheduled Cleaning Regime • Percentage from cleaning checklist • Sample size 10% per week • Performance Tolerance: 5%	• Daily/Weekly: Measured and monitored using the Cleaning Checklist

		Crockery/cutlery/glassware	• Crockery/cutlery/glassware are washed by a method that complies with current legislation. Items are free from dust, removable soil, food deposits and stains	• In accordance with Scheduled Cleaning Regime • Percentage from cleaning checklist • Sample size 10% per week • Performance Tolerance: 5%	• Daily/Weekly: Measured and monitored using the Cleaning Checklist
		Refrigerator	• Item is ensured to be clean at all time and the temperatures are read, recorded and reported for action as appropriate on a daily basis	$\frac{\text{No of compliant records}}{\text{No of records per week}}$ Sample size 10% per week Performance Tolerance: 5%	• Weekly: Measured and monitored using the departmental checklist and temperature records
	Environment	Local Odours	• Free of strong odours or unpleasant odours caused by cleaning or lack of cleaning	• The environment must be ensured to be of a pleasant odour and freshness at all times	• Daily/Weekly: Measured and monitored using the Cleaning Checklist
		Condensation	• No evidence of internal condensation arising from cleaning operations	• The environment must be ensured to be of a pleasant odour and freshness all the times	• Daily/Weekly: Measured and monitored using the Cleaning Checklist
	Standard	Importance Rank	• All cleaning areas as per importance rank must achieve the standard required by the client and all problems arising must be attended to accordingly	Priorities Rank: In the event of problems that affect the H&S of employees, which cause breach of the H&S at Work Act: • Urgent Priority: 1 Core Hour in Core Hour Areas, 1 Hour in 24 Hour Areas In the event of non-hazardous problems in staff or public areas that affect visitors' or staff's use of the space. • High Priority: 2 Core Hours In the event of non-hazardous problems that are unlikely to significantly affect visitors' or	• Monthly Performance Report

				staff's use of the space. • Routine Priority: 8 Core Hours	
[7] Exterior Cleaning	Elements	Surface & Fittings	• All must be free of cleanable stains (except caused by design or weather conditions), film marks and smears (except caused by design and weather conditions), graffiti, other marks and blemishes capable of being cleaned	• In accordance with Scheduled Cleaning Regime • Percentage from cleaning checklist • Sample size: 10% per week • Performance Tolerance: 5%	• Daily/Weekly: Measured and monitored using the Cleaning Checklist
[8] Specialist Cleaning	Standard	Importance Rank	• All cleaning areas as per importance rank must achieve the standard required by the client and all problems arising must be attended accordingly	Priorities Rank: In the event of problems that affect the H&S of employees which cause breach of the H&S at Work Act, and non-hazardous problems in staff areas that affect visitors' or staff's use of the space. • Urgent Priority: 1 Core Hour in Core Hour Areas, 1 Hour in 24 Hour Areas In the event of non-hazardous problems in staff or public areas that affect visitors' or staff's use of the space. • High Priority: 2 Core Hours In the event of non-hazardous problems that are unlikely to significantly affect visitors' or staff's use of the space. • Routine Priority: 8 Core Hours	• Monthly Performance Report
[9] Immediate Response Cleaning	Standard	Importance Rank	• All cleaning areas as per importance rank must achieve the standard required by the client	Priorities Rank: In the event of hazardous and non-hazardous deposits that	• Monthly Performance Report

				affect the H&S of employees, e.g., spillage which cause a breach of the H&S at Work Act, and non-hazardous deposits in public areas that affect visitors' or staff's use of the space. • Urgent Priority: 1 Core Hour in Core Hour Areas, 1 Hour in 24 Hour Areas In the event of non-hazardous deposits that affect visitors' pr staff's use of the space. • High Priority: 2 Core Hours In the event of non-hazardous problems that are unlikely to significantly affect visitors' or staff's use of the space but require cleaning for another purpose. • Routine Priority: 8 Core Hours	
[10] Reactive Cleaning	Priorities	Attendance	• Priorities on the reactive cleaning requests must be categorised into 3 categories and attended within timescales	Priority Request Targets: • 100% of Priority requests are responded to within 1 Hour in Normal Working Hours • 90% of Priority 2 requests are responded to within Next Working Day in Normal Working Hours • 90% of Priority 3 requests are responded to within 5 Days in Normal Working Hours	• Monthly Performance Report

		Cleaning	• Priorities on the reactive cleaning requests must be categorised into 3 categories and cleaned within timescales	Priority Request Targets: • 100% of Priority 1 cleaning requests are cleaned within 4 Hours • 90% of Priority 2 cleaning requests are cleaned within next working day • 90% of Priority 3 cleaning requests are cleaned within 5 Days	• Monthly Performance Report
	Tasks	Emergency	• Emergency reactive cleaning tasks are responded to within 10 mins and rectified within 30 mins of notification	• Response Time: 10 mins	• Monthly Performance Report
		Urgent	• Urgent reactive cleaning tasks are responded to within 15 mins and rectified within 60 mins of notification	• Response Time: 15 mins	• Monthly Performance Report
		Reactive	• Reactive cleaning tasks are responded to within 30 mins and rectified within 2 hours of notification	• Response Time: 30 mins	• Monthly Performance Report
[11] Special Cleanse	Tasks	Responsive	• Responsive special cleans are completed to defined procedures and timescales	• Rectification Time: 60 mins	• Monthly Performance Report
		Scheduled	• Responsive special cleans are completed to defined procedures and timescales	• Rectification Time: 2 hours	• Monthly Performance Report
[12] Feminine Hygiene	Disposal	Bins	• Maintain disposal bins at points of use	• 100% availability of disposal bins as per agreed requirements	• Daily/Weekly: Measured and monitored using the Cleaning Checklist

TECHNICAL	[T9] PEST CONTROL				
Parameters	Metrics	Indicators	Attributes	Formula/Target	Monitoring
[1] Treatment	Identification	Appropriateness	• All pests are identified properly and appropriate treatments are carried out accordingly	• 100% of pest control treatments meet the overall requirements	• Monthly Performance Report
	Ad-hoc	Normal Hours	• Ad-hoc sightings will be responded to within the agreed timings during normal hours	• Response Time: 1 hour	• Consistent/Weekly monitoring
		Other Hours	• Ad-hoc sightings will be responded to within the agreed timings during other hours	• Response Time: 2 hours	• Consistent/Weekly monitoring
	Visit	Frequency	• Visits are made at a required frequency	• 90% of all planned pest control visits completed to plan	• Monthly Performance Report
		Emergency	• Emergency visits are made within agreed response times	• 90% of all planned pest control responses made on next working day	• Consistent/Weekly monitoring
	Incidence	Attendance	• No incidence or evidence of pests or infestations (not previously found) in the building i.e droppings, nests, holes • No incidence of passive pest control measures not in place, based on contractor's approved register of passive measures • No incidence of reactive pest control measures not in place	In the event of any infestations or existence of pests that may give rise to human injury. • Urgent Priority: 30 minutes, 24 hours a day, every day of the year to either eliminate/remove the problem or where not possible, to have put in place measures to eliminate/remove the problem In the event of any infestations or existence of pests that will not give rise to human injury. • High Priority: 24 hours, every day of the year	• Monthly Performance Report

[2] Programmes	Responsive Measures	Timeline	• Responsive measures in the office or public areas are implemented within the appropriate or agreed time	No of compliant responsive measures taken --- No of responsive measures required in month Representative random sample size every month (Where no responsive measures are required the result of this performance measurement criterion shall be 100%)	• Monthly: Measured using checklist. Monitored by regular, recorded random checks by supervisors and managers. Compliance with pest control procedures
	Planned Preventive Programmes	Maintenance	• A planned preventive programme is maintained to ensure the premises and grounds are pest controlled	No of compliant random checks --- No of random checks in month Representative random sample size every month	• Monthly: Measured using checklist. Monitored by regular, recorded random checks by supervisors and managers. Compliance with pest control procedures

TECHNICAL	[T10] GROUNDS MAINTENANCE				
Parameters	Metrics	Indicators	Attribute	Formula/Target	Monitoring
[1] Planning	Completion	Schedule	• Planned grounds maintenance is completed according to schedule	• 90% of all planned tasks completed to schedule	• Monthly Performance Report
[2] Landscaping Works	Cleanliness	Standards	• All areas to be clear of litter, leaves and all other debris • No spillage of any substance is still visible, except on roads and car parks, unless due to service provider negligence • All areas are clear of dead animals • Grounds remain neat and tidy from litter and leaves • Landscaped areas are to be safe, correctly maintained, tidy and free from accumulated litters	• Performance standards maintained at 90% $\frac{\text{No of compliant inspections per month}}{\text{No of inspections per month Representative random sample size}}$	• Monthly: Measured and monitored using departmental checklist
	Clearance	Daily	• No landscaping equipment to be left unattended • No pedestrian or vehicular access routes or car parks are deemed unsafe due to service provider negligence or inaction • Grounds remain free from litter and leaves	• Performance standards maintained at 90%	• Daily: Measured and monitored using departmental checklists.
		Natural Disaster	• In the event or likelihood of freezing conditions or settling snow, all fire escapes, hospital building entrances/exits, means of access, road, paths, paved areas and car parks are cleared/salted. Gritted to maintain a safe condition for use	$\frac{\text{No of compliant inspections per day}}{\text{No of inspections per day Representative random sample size}}$	• Daily: Measured and monitored using departmental checklists.

	Maintenance	Standards	• Grass to be no longer than 5 cm • Nil incidence of death or damage to listed trees caused by service provider negligence	No of compliant inspections per day --- No of inspections per day Representative random sample size	• Daily: Measured and monitored using departmental checklists.
		Garden Furniture	• All external furniture is to be safe and correctly maintained	No of compliant inspections per month --- No of inspections per month Representative random sample size	• Daily: Measured and monitored using departmental checklists.
[3] External Work	Repairs	Specification	• Roads, paths and paved areas are repaired as specified and are to be safe, clear of spillages, correctly maintained, tidy and clear of accumulated litter	No of compliant inspections per quarter --- No of inspections per quarter Representative random sample size	• Quarterly: Measured and monitored using departmental checklists.
	Signage	Maintenance	• All external signage is to be maintained to a good appearance and kept free from any foliage obstruction	No of compliant inspections per month --- No of inspections per month Representative random sample size	• Monthly: Measured and monitored using departmental checklists.

TECHNICAL	[T11] MANAGEMENT INFORMATION				
Parameters	Metrics	Indicators	Attributes	Formula/Target	Monitoring
[1] Service	Customer Satisfaction	Monitoring System	• Provision of Management Information including open book accounting and system for monitoring customer satisfaction	No of compliant responses / Total number of logged requests per month Sample size: 100% Performance Tolerance: 10%	• Weekly: Measured and monitored using the Helpdesk log
[2] Reports	Quality	Delivery Timeliness	• Reports are submitted within time scale as agreed • Any records, financial or accounting information must be available to the Authority for inspection within 1 Working Day of request	Non compliant random checks / No. of random checks per month Delivery Targets: • Daily report must be delivered not later than 0900 on the following working day • Weekly report must be delivered not later than 1 working day after the end of the week to which it refers	• Monthly: Monthly Performance Report
		Report Accuracy	• Records must be reported as accurately as they were recorded	No. of compliant random checks / No. of random checks per month Performance tolerance: 0%	• Monthly: using departmental checklist • 4 random checks/month by supervisor and manager
		Complete Records	• Report or record complete and as specified and required respectively	No. of compliant random checks / No. of random checks per month Performance tolerance: 0%	• Monthly: using departmental checklist • 4 random checks/month by supervisor and manager

TECHNICAL	[T12] PARKING MANAGEMENT & TRAFFIC CONTROL				
Parameters	Metrics	Indicators	Attributes	Formula/Target	Monitoring
[1] Parking Management	Staffing & Administration	Presence	• Staff maintain a high-profile presence and visible attendance around access routes, the hospital and car parking areas	Percentage of completed security tours / Scheduled tours per week/month Sample size: 100% Performance tolerance: 15%	• Weekly: Measured and monitored using departmental checklist. Data using predetermined electronic checkpoints
		Patrolling Points	• All control points are routinely patrolled and monitored to ensure security compliance	Number of compliant patrols / Total number of scheduled patrols per month Sample size: 100% Performance tolerance: 5%	• Weekly: Measured and monitored using departmental checklist. Data using pre-determined electronic checkpoints
		Protocols	• Staff observe the company's approved protocol for contact and liaison with the police • Compliance over number of incidents	Compliance / Number of incidents when police are contacted, per month Pass/Fail	• Weekly: Measured and monitored using incident report book
	Incidents	Reporting Procedure	• Staff follow appropriate action and reporting procedures with regard to observed/identified incidents of vehicle theft, theft from vehicles, damage, vandalism or suspected intruders on the hospital premises	Number of incidents taken action / Total number of incidents per week	• Monthly: Measured and monitored using incident report book
		Records	• Details of all untoward incidents are recorded on Incident Report Forms provided by the contractor and submitted to the Security Advisor or her/his deputies on daily basis	Compliant reports / Total reported incidents per month Pass/Fail	• Weekly: Measured and monitored by comparison of incident report book and incident report form

		Nil Incidents	• No incidence of confirmed bookings not being available • No incidence of not issuing an identification pass to an entitled user • No incidence of incorrect allocation of space or double booking • No incidence of security guidelines being violated where under the control of the service provider	Number of incidents taken action / Total number of incidents per week	• Monthly: Measured and monitored using incident report book
	Parking Permits & Fees	Permit Issuance	• An appropriate system of issuing and cancelling parking permits is applied in accordance with the client's requirements	Number of non-complaint service responses to issuing and retrieving/cancelling / Number of required service responses	• Weekly: Determined by default. Defaults recorded in incident report book
		Payment system	• Payment systems, ticket issues and records are maintained efficiently	• Provision of monthly management report: Pass/ Fail. • Performance Tolerance: 10%	• Weekly: Measured using Departmental Checklist. Data from audit of controlled records
[2] Traffic Control	Control	Clearance	• Controls are applied to ensure that roadways are cleared within 1 hour at all times	• Provision of weekly management report • Pass/Fail	• Weekly: Determined by default. Defaults recorded in incident report book
			• Controls are applied which are intended to ensure that roadways in the Car Parking and Security Site are kept clear at all times	Number of compliant responses / Total number of incidents per month Performance tolerance: 5%	• Determined by Default: Measured using Departmental Checklist/Data from the Incident Report Book. Monitored by security manager through documentation inspection
	Inappropriate Parking	Proper Enforcement	• Staff take appropriate action on discovery of inappropriately parked vehicles within Car Parking and Security Site	Number of completed random checks with appropriate action / Scheduled random checks per month Performance tolerance: 5%	• Weekly: Measured using Incident Report Book. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month

	Entrance	Restricted Entry	• Entry to designated car parks/ restricted parking areas is restricted to authorised persons/ permit holders	No. of compliant random checks / No. of random checks per month Performance tolerance: 0%	• Monthly: using departmental checklist • 4 random checks/month by supervisor and manager
	Admission/Exit	Convenient Access	• Car park users have satisfactory and prompt admission to and exit from car parks	No. of compliant random checks / No. of random checks per month Performance tolerance: 0% Service Response Time: 5 mins	• Monthly: using departmental checklist • 4 random checks/month by supervisor and manager
	Clearance	No Obstruction	• All no parking areas are to be kept free from obstruction by unauthorised vehicles in line with the client policy	• Provision of weekly management report • Pass/Fail	• Weekly: Determined by default. Defaults recorded in incident report book
	Maintenance	Cleanliness	• Car parks are maintained to a safe and clean level. All hazardous spillages and materials are reported and the area made safe.	No. of compliant random checks / No. of random checks per month Performance tolerance: 0%	• Monthly: using departmental checklist • 4 random checks/month by supervisor and manager

TECHNICAL	[T13] EQUIPMENT MANAGEMENT & SUPPLIES				
Parameters	Metrics	Indicators	Attributes	Formula/Target	Monitoring
[1] Equipment Management	Monitoring	Test Compliance	• Record on the equipment displaying the last date of testing and the next due testing date • The equipment must not miss the next due date	• The records must be up-to-date and indicate next service date	• Weekly: Determined by default. Defaults recorded in performance report book
		Parts Surveillance	• If there is any part of the equipment that fails, an appropriate and visible notice has to be left on the equipment to warn future users of the failure of that piece of equipment	• The records must be up-to-date and indicate warning of such failures	• Weekly: Determined by default. Defaults recorded in performance report book
[2] Communication Equipment	Provision	Client's Requirement	• Provision and maintenance of communication equipment (i.e. telephones, fax machines, telex machines) must meet the client's requirement and standard	No. of compliant random checks / No. of random checks per month Performance tolerance: 0%	• Monthly: using departmental checklist • 4 random checks/month by supervisor and manager
[3] Connection Equipment & Cables	Internet Cable Connections & Switching Devices	Updated Database	• Patching or jumping being carried out as recorded on the Network Management System's (NMS) database request log	No. of compliant random checks / No. of random checks per month Performance tolerance: 0%	• Monthly: using departmental checklist • 4 random checks/month by supervisor and manager
		Reconfiguration Request	• NMS database accurately reflecting the authority's request for reconfiguration of the equipment racks	No. of compliant random checks / No. of random checks per month Performance tolerance: 0%	• Monthly: using departmental checklist • 4 random checks/month by supervisor and manager
		Connection Test	• Monthly connection test on 25 computers to check that their actual connection is consistent with the specified connection	No. of compliant random checks / No. of random checks per month Performance tolerance: 0%	• Monthly: using departmental checklist • 4 random checks/month by supervisor and manager

	Induction Loop System and NMS	Updated Database	• Patching or jumping being carried out as recorded on the Network Management System's (NMS) database request log	No. of compliant random checks / No. of random checks per month Performance tolerance: 0%	• Monthly: using departmental checklist • 4 random checks/month by supervisor and manager
		Reconfiguration Request	• NMS database accurately reflecting the authority's request for reconfiguration of the equipment racks	No. of compliant random checks / No. of random checks per month Performance tolerance: 0%	• Monthly: using departmental checklist • 4 random checks/month by supervisor and manager
		Connection Test	• Monthly connection test on 25 computers to check that their actual connection is consistent with the specified connection	No. of compliant random checks / No. of random checks per month Performance tolerance: 0%	• Monthly: using departmental checklist • 4 random checks/month by supervisor and manager
[4] Supplies	Catalogues	Publication & Distribution	• Publish and distribute fixed price catalogues with terms and conditions on two occasions per annum	No. of agreed holders having received their updated catalogue within two weeks of publication / No. of holders on distribution list Performance tolerance: 10%	• Monthly: Measured using Departmental Checklist. Data from FM Department confirmation of compliance. Monitored by supplies manager through documentation inspection
	Goods	Client's Standards	• Goods are ordered to meet client specified standards	No. of compliant products, or agreed substitutes in sample / No. of products in sample Sample size: 100% per month Performance tolerance: 5%	• Weekly: Measured and monitored using the purchase order system
		Request Timescale	• Initial response to requests for non-stock goods within 12 working hours and supply within agreed and confirmed timescales, excluding bank holidays and weekends	No. of compliant requests per month / Total number of requests per month Sample size: 100% per month Performance tolerance: 10%	• Weekly: Measured and monitored using the purchase order system
		Stock Levels	• Stock levels are maintained between the set minimum and maximum levels unless otherwise agreed with the staff handling the supplies	No. of occasions of complying / Number of users Sample size: 100% per month Performance tolerance: 10%	• Weekly: Measured and monitored using the departmental checklist

		Delivery Schedule	• Supply requisitioned or top-up goods in line with agreed delivery schedule	No. of compliant deliveries in sample No. of deliveries in sample Sample size: 100% per month Performance tolerance: 10%	• Monthly: Measured and monitored using the purchase order system
		Itemised Price Delivery	• Provide itemised price delivery note with each delivery	No. of compliant deliveries in sample No. of deliveries in sample Sample size: 100% per month Performance tolerance: 10%	• Monthly: Measured and monitored using the departmental checklist
		Delivery Records	• Records at goods receiving point are maintained including details of delivery performance	No. of compliant records in sample No. of records in sample Sample size: 100% per month Performance tolerance: 5%	• Monthly: Measured and monitored using the departmental checklist
		Emergency Deliveries	• Accomplish all medical and major accident emergency deliveries within 2 hours of initial request	No. of compliant requests per month Total number of requests per month Sample size: 100% per month Performance tolerance: 5%	• Monthly: Measured and monitored using the Helpdesk log
		Issuance	• Goods are issued as requisitioned	No. of compliant products, or agreed substitutes in sample No. of products in sample Sample size: 100% per month Performance tolerance: 5%	• Weekly: Measured and monitored using the purchase order system
		Recall Procedures	• Product recall procedures are applied	No. of compliant occasions in period Occasions in period Sample size: 10% Performance tolerance: 5%	• Monthly: Measured and monitored using the departmental checklist
		COSHH	• Provide requisitioning departments with COSHH data sheets for all relevant products	No. of compliant products Total COSHH related products Performance tolerance: 0%	• Monthly: Measured and monitored using central COSHH data bank and issue records

		Users' Consultation	• Supplies' users are consulted via surveys (4 per year) regarding changes in products, additions and deletions of stock and non-stock items	No. of actual surveys / Scheduled surveys Sample size: 10% Performance tolerance: 10%	• Monthly: Measured and monitored using the departmental checklist
	Storage	Safety	• All goods are in safe custody within 30 minutes of receipt	No. of compliant records per month / Number of records per month Pass/Fail Performance tolerance: 5%	• Weekly: Measured and monitored using the departmental checklist
		Suitable Conditions	• All goods are stored in appropriate areas and under suitable storage conditions	No. of compliant random checks / Number of random checks per month Performance tolerance: 10%	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
		Temperature Controlled	• All temperature sensitive goods are placed in temperature controlled storage within 15 minutes of receipt	No. of compliant records per month / Number of records per month Pass/Fail Performance tolerance: 5%	• Weekly: Measured and monitored using the departmental checklist
		Maintained Areas	• Store areas are maintained to a clean, tidy standard	No. of compliant inspections per month / Number of inspections per month Performance tolerance: 10%	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
		Equipment Stores	• Equipment stores shall be kept in a clean condition	No. of compliant inspections per month / Number of inspections per month Performance tolerance: 10%	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
		Delivery Containers	• Goods are delivered to all departments in suitable and appropriate containers	No. of compliant deliveries in sample / No. of deliveries in sample Sample size: 100% per month Performance tolerance: 5%	• Monthly: Measured and monitored using the purchase order system

TECHNICAL	[T14] HELPDESK				
Parameters	Metrics	Indicators	Attributes	Formula/Target	Monitoring
[1] Management	Staffing	Instructions	• Prepare and maintain Helpdesk instructions	• Helpdesk instructions maintained accurately at all times	• Daily: Measured using Helpdesk Log • 4 weekly random checks by supervisor and manager
		Office Hours	• The Helpdesk will remain staffed during normal office hours	• 100% staffing of Helpdesk during normal office hours	• Daily: Measured using Helpdesk Log • 4 weekly random checks by supervisor and manager
	Escalation	Procedures	• Prepare and maintain escalation instructions	• Helpdesk escalation procedures maintained accurately at all times	• Daily: Measured using Helpdesk Log • 4 weekly random checks by supervisor and manager
	Reports	Procurement	• Detailed reliable data input and web based statistical output reports	• Real-time reports are accurate at the time of production	• Daily: Measured using Helpdesk Log • 4 weekly random checks by supervisor and manager
[2] Support Service	Calls	All Calls	• The personnel must not give a lower priority status than required to 6-10% of calls registering problems • The personnel must not allow more than 10% of any calls registering problems or complaints to be given lower priority than required	$\frac{\text{No. of compliant random checks}}{\text{No. of random checks per day}}$ Performance tolerance: 0%	• Daily: Measured using Helpdesk Log • 4 weekly random checks by supervisor and manager
		Individual Calls	• Call must be answered within 1 minute between 0830 and 1800 on a working day • The personnel must attend to a booking of a facility or a request for a service • The personnel must attend to a request for information to be provided by them	$\frac{\text{No. of compliant random checks}}{\text{No. of random checks per day}}$ Performance tolerance: 0%	• Daily: Measured using Helpdesk Log • 4 weekly random checks by supervisor and manager

		Office Hours	• All calls answered within agreed timescales	• 90% of calls answered within 30 seconds	• Daily: Measured using Helpdesk Log • 4 weekly random checks by supervisor and manager
		Out of Hours	• All calls answered within agreed timescales by Security Team	• 90% of calls answered within 1 hour	• Daily: Measured using Helpdesk Log • 4 weekly random checks by supervisor and manager
	Caller Call Back	Response	• Callers are kept informed at regular intervals of action implemented and subsequent delays or amendments to fault remedy	• 100% of acute and emergency callers kept advised by telephone of attendance progress	• Daily: Measured using Helpdesk Log • 4 weekly random checks by supervisor and manager
		Satisfaction	• Satisfaction is monitored according to feedback	• 5% of all callers are surveyed for feedback	• Daily: Measured using Helpdesk Log • 4 weekly random checks by supervisor and manager
	Emails	Urgent	• All urgent emails answered within agreed timescales	• 90% of emails answered within 1 Hour	• Daily: Measured using Helpdesk Log • 4 weekly random checks by supervisor and manager
		Non-Urgent	• All non-urgent emails answered within agreed timescales	• 90% of emails answered within 1 Day	• Daily: Measured using Helpdesk Log • 4 weekly random checks by supervisor and manager
	Requests	Attendance	• Enquiries and requests for services are actioned within 2 minutes	No of compliant random checks / No of random checks per day Representative random sample size	• Daily: Measured using Helpdesk Log • 4 weekly random checks by supervisor and manager
	Monitoring	System In Place	• Systems are in place to monitor all requests for services up to completion	No of compliant random checks / No of random checks per day Representative random sample size	• Daily: Measured using Helpdesk Log • 4 weekly random checks by supervisor and manager

TECHNICAL	[T15] CATERING				
Parameters	Metrics	Indicators	Attributes	Formula/Target	Monitoring
[1] Management	Staffing	Appropriate Attires	• Staff are suitably dressed in appropriate clean, protective clothing before undertaking food delivery	No of compliant random checks / No of random checks per month Performance Tolerance: 10%	• Weekly: Measured using departmental checklist. Monitored by regular, recorded random checks by supervisors and managers. 4 random checks per month
		Presentation	• Staff presentation to agreed standards	• Production and service staff adhere to the relevant Grooming & Uniform policies from SLA for the relevant area	• Weekly: Measured using departmental checklist. Monitored by regular, recorded random checks by supervisors and managers. 4 random checks per month
		Competency	• All staff capable of achieving the required service standards	No of compliant random checks / No of random checks per month Performance Tolerance: 10%	• Weekly: Measured using departmental checklist. Monitored by regular, recorded random checks by supervisors and managers. 4 random checks per month
		Awareness Training	• Staff are trained in food hygiene awareness	No of compliant training records / No of records Sample size 100% per month Performance Tolerance: 5%	• Bi-annually: Monitored using personal training records
		Staffed Level	• Service areas manned to achieve agreed service standards	• Production and service manning levels shall be in accordance with relevant SLA for the area	• Weekly: Measured using departmental checklist. Monitored by regular, recorded random checks by supervisors and managers. 4 random checks per month
		Staff Turnover	• Staff efficiency and capability	• Turnover of production and service staff should not exceed more than 10% in any period	• Bi-annually: Monitored using performance report

	Customer Usage	Usage Percentage	• Annual budgeted Customer Usage Percentage to be achieved on a location basis by year-end	No of compliance / No of checks bi-annually Sample size: 100% Performance Tolerance: 5%	• Bi-annually: Monitored using performance report
	Safety & Hygiene	Statutory Standards	• Staff maintain statutory standards of food safety and personal hygiene at all times	No of compliant random checks / No of random checks per month Sample size: 100% Performance Tolerance: 5%	• Daily: Measured using departmental checklists. Monitored by regular, recorded random checks by managers and supervisors
	Problems	Rectification Actions	• All problems arising must be attended accordingly	No of compliant random checks / No of random checks per month Sample size: 100% Performance Tolerance: 5%	• Daily: Measured using departmental checklists. Monitored by regular, recorded random checks by managers and supervisors
[2] Purchased Goods	Commodities	Purchasing of Resources	• All food and ingredients are purchased from Approved Supply Sources	No of compliant occasions in month / No of occasions in month Sample size: 20% per month Performance Tolerance: 5%	• Monthly: Measured and monitored using purchase order system and approved supplier list
		Menu Description	• All food and ingredients are appropriate to the menu description and recipe for which they are intended	No of justified complaints / No of meal types in month Sample size: 100% per month Performance Tolerance: 15%	• Monthly: Measured and monitored using purchase order system, agreed menus and recipes
	Goods In	Thorough Checks	• All incoming goods are thoroughly checked regarding quantity, general quality and damage, date markings, pest damage/infestation, and temperature	No of compliant checks in week / No of checks in week Sample size: 100% per week Performance Tolerance: 10%	• Monthly: Measured and monitored using reported element of Purchase Order System
		Delivery Record	• Procedures are in place and applied to reject and record goods deliveries which are defective in any respect	No of actual compliant occasions per week / No of occasions in week Sample size: 100% per week Performance Tolerance: 10%	• Monthly: Measured and monitored using reported element of Purchase Order System

		Package Removal	• All external packaging is removed before placing goods in storage	No of compliant random checks / No of random checks per week Sample size: 100% per week Performance Tolerance: 15%	• Weekly: Measured using departmental checklist. Monitored by regular, recorded random checks by supervisors and managers. 4 random checks per month
		Labelled Containers	• All containers to which goods are transferred are clearly marked to identify content and storage date	No of compliant random checks / No of random checks per week Sample size: 100% per week Performance Tolerance: 10%	• Weekly: Measured and monitored using reported elements of purchase order system. Monitored by regular, recorded random checks by supervisors and managers. 4 random checks per month
	Stock	Stock Control	• Procedures are in place and applied to ensure satisfactory rotation and control of stocks	No of compliant random checks / No of random checks per week Sample size: 100% per week Performance Tolerance: 15%	• Weekly: Measured using departmental checklist. Monitored by regular, recorded random checks by supervisors and managers. 4 random checks per month
	Storage	Appropriate Storage	• All frozen or chilled goods are placed in appropriate storage within 15 mins of delivery	No of compliant occasions in sample / No of occasions in sample Sample size: 100% per week Performance Tolerance: 10%	• Weekly: Measured and monitored using reported elements of purchase order system. Monitored by regular, recorded random checks by supervisors and managers. 4 random checks per month
			• All non-temperature critical goods are placed in appropriate storage within 4 hours	No of compliant occasions in sample / No of occasions in sample Sample size: 100% per week Performance Tolerance: 10%	• Weekly: Measured and monitored using reported elements of purchase order system. Monitored by regular, recorded random checks by supervisors and managers. 4 random checks per month
			• All goods are stored in appropriate and suitably defined areas	No of compliant random checks / No of random checks per week Sample size: 100% per week Performance Tolerance: 10%	• Weekly: Measured and monitored using reported elements of purchase order system. Monitored by regular, recorded random checks by supervisors and managers. 4

					random checks per month
			• All goods are stored on or in suitable shelving, pallets or containers	No of compliant random checks / No of random checks per week Sample size: 100% per week Performance Tolerance: 10%	• Weekly: Measured and monitored using reported elements of purchase order system. Monitored by regular, recorded random checks by supervisors and managers. 4 random checks per month
[3] Hygiene and Quality Control	Preparation	Handling of Food	• Food is only prepared in the appropriate designated areas	No of compliant checks / No of checks per month Sample size: 100% Performance Tolerance: 10%	• Monthly: Measured using departmental checklist. Monitored by daily, recorded checks by managers and supervisors
			• Food is only brought into the appropriate preparation areas as required to minimise handling time	No of compliant checks / No of checks per month Sample size: 100% Performance Tolerance: 10%	• Monthly: Measured using departmental checklist. Monitored by daily, recorded checks by managers and supervisors
		Appropriate Equipment	• Colour coded equipment is used in the appropriate designated areas	No of compliant checks / No of checks per month Sample size: 100% Performance Tolerance: 10%	• Monthly: Measured using departmental checklist. Monitored by daily, recorded checks by managers and supervisors
			• Separate facilities are used for washing the equipment used for the preparation of raw food	No of compliant checks / No of checks per month Sample size is to be agreed Performance Tolerance: 10%	• Monthly: Measured using departmental checklist. Monitored by daily, recorded checks by managers and supervisors
		Storage	• Prepared food is placed into appropriate storage within 30 minutes	No of compliant checks / No of checks per month Sample size: 100% Performance Tolerance: 10%	• Monthly: Measured using departmental checklist. Monitored by daily, recorded checks by managers and supervisors

		Cleaning	• Preparation areas are given an interim clean after each function or task	No of compliant checks / No of checks per month Sample size: 100% Performance Tolerance: 10%	• Monthly: Measured using departmental checklist. Monitored by daily, recorded checks by managers and supervisors
		Food Quality Control	• Measures are taken to protect food quality during preparation, through controlling quantities to match production requirements	No of compliant production schedules / No of schedules per month Sample size: 100% Performance Tolerance: 10%	• Monthly: Measured using departmental records. Monitored against production schedules by supervisors
			• Measures are taken to protect food quality during preparation, through employing appropriate thawing controls	No of compliant records / No of records in sample Sample size: 100% Performance Tolerance: 5%	• Monthly: Measured using departmental records. Monitored by weekly, recorded checks by managers and supervisors
	Cooking	Temperature Control	• A minimum core temperature of +72C is achieved before use of cooked food.	No of compliant records / No of records in sample Sample size: 100% per month Performance Tolerance 0%	• Monthly: Measured and monitored using temperature records
			• The cooking of food for hot service is controlled to ensure that completion is as near as possible to the time of service	No of compliant production schedules / No of schedules per month Sample size: 100% of schedules Performance Tolerance: 10%	• Monthly: Measured using departmental records. Data from production schedules. Monitored by daily, recorded checks by managers and supervisors
			• Temperature of food is monitored and recorded after cooking process and action taken on defects	No of compliant records per month / No of records per month Sample size: 100% per month Performance Tolerance 5%	• Monthly: Measured and monitored using temperature records
		Methods	• Cooking methods are employed to ensure maintenance of quality and nutritional standards, through control of production and cooking completion as near as possible to the time of service using appropriate methods	No of compliant production schedules / No of schedules per month Sample size: 100% of schedules Performance Tolerance: 10%	• Monthly: Measured using departmental records. Data from production schedules. Monitored by daily, recorded checks by managers and supervisors

	Chilling	Temperature Standard	• Food is chilled to at or below 3C within 90 minutes	No of compliant records / No of records in sample Sample size: 100% per week Performance Tolerance: 0%	• Weekly: Measured and monitored using departmental temperature record
		Temperature Monitoring	• Temperature of food is monitored and recorded during chilling process and action taken on defects.	No of compliant records / No of records in sample Sample size: 100% per week Performance Tolerance: 10%	• Weekly: Measured and monitored using departmental temperature record
		Food Labelling	• Chilled food is labelled to identify product and maximum shelf life	No of compliant checks / No of checks per week in sample Sample size: 100% per week Performance Tolerance 5%	• Weekly: Measured using departmental checklist. Monitored by weekly, recorded checks by supervisors and managers
	Refrigeration and Chilled Vending Equipment	Working Details	• Refrigeration is clearly designated for appropriate use and details of correct working temperature are displayed	No of compliant records / No of records in sample Sample size: 100% per week Performance Tolerance: 5%	• Weekly: Measured and monitored departmental temperature record checklists. Compliance with legislation
		Temperature Control	• Temperatures of refrigerators and chilled vending machines are monitored, recorded and action taken on defects	No of compliant records / No of records in sample Sample size: 100% per week Performance Tolerance: 10%	• Weekly: Measured and monitored departmental temperature record checklists. Compliance with legislation
		Food Labelling	• All food in refrigerators or chilled vending is labelled to identify shelf life i.e date of production or use by date	No of compliant occasions / No of occasions in sample Sample size: 100% per week Performance Tolerance: 5%	• Weekly: Measured and monitored departmental checklists
		Disposal	• Products outside of shelf life are discarded	No of compliant checks / No of checks in sample Sample size: 100% per week Performance Tolerance: 5%	• Weekly: Measured and monitored departmental checklists. Compliance with stock control procedures

	Food Service	Temperature Monitoring	• Temperature of food is monitored and recorded and action taken on defects	No of compliant records / No of records per week Sample size: 100% per week Performance Tolerance: 5%	• Weekly: Measured and monitored departmental temperature checklists. Monitored by regular, recorded random checks by supervisors and managers
		High-risk Food	• High-risk food is not available for plating until just prior to service commencements unless under temperature control	No of compliant checks / No of checks per week Sample size: 20% Performance Tolerance: 10%	• Weekly: Measured and monitored departmental checklists. Monitored by daily recorded checks by supervisors and managers
	Food Distribution	Food Protection	• All food is protected during distribution from cross contamination	No of compliant occasions / No of occasions in sample Sample size: 20% Performance Tolerance: 5%	• Weekly: Measured and monitored weekly using departmental checklists.
			• All food for functions and vending services is protected during distribution from cross contamination	No of compliant occasions / No of occasions in sample Sample size: 20% Performance Tolerance: 5%	• Weekly: Measured and monitored weekly using departmental specific checklists.
		Temperature Control	• All food is transferred or distributed in suitable conditions to maintain temperature control	No of compliant occasions / No of occasions in sample Sample size: 20% Performance Tolerance: 10%	• Weekly: Measured and monitored weekly using departmental checklists.
			• Temperature of food is monitored and recorded	No of compliant records / No of records in sample Sample size: 100% of records Performance Tolerance: 5%	• Weekly: Measured and monitored departmental temperature records. Monitored by daily recorded checks by supervisors and managers
			• At the time of service, hot food is above +63C	No of compliant records / No of records in sample Sample size: 100% of records Performance Tolerance: 0%	• Weekly: Measured and monitored departmental temperature records. Minimum 3 checks at each service point per main mealtime

			• At the time of service, cold food is at or below +8C	No of compliant records / No of records in sample Sample size: 100% of records Performance Tolerance: 0%	• Weekly: Measured and monitored departmental temperature records. Minimum 3 checks at each service point per main mealtime
		Meal Trolleys	• Meal trolleys are delivered to food service areas within 30 minutes of scheduled times	No of compliant deliveries / No of deliveries Performance Tolerance: 10%	• Weekly: Measured using departmental checklist
			• Meal trolleys are removed from service areas within 30 minutes of completion of service and returned to zonal or central kitchens	No of compliant areas / No of areas Sample size: 100% Performance Tolerance: 15%	• Weekly: Measured using departmental checklist
			• Any vehicles used for meal trolley distribution are kept in a hygienic condition	No of compliant random checks / No of random checks per month Performance Tolerance: 10%	• Weekly: Measured and monitored departmental checklists. Monitored by regular, recorded random checks by supervisors and managers
	Regeneration	Trained Staff	• Regeneration is undertaken by an appropriately trained member of staff	No of compliant occasions / No of occasions in period Sample size: 20% Performance Tolerance: 10%	• Weekly: Monitored by catering managers through inspection of departmental, regeneration and training records
		Temperature Record (Chilled Food)	• Food temperature: temperature of any chilled food to be served hot is taken and recorded immediately before regeneration. Max temperature +3C	No of compliant records per week / No of records per week Sample size: 100% per week Performance Tolerance: 0%	• Weekly: Measured and monitored departmental checklists/daily checks on 3 items per trolley. Monitored by regular, recorded random checks by supervisors and managers
		Temperature Record (Hot Food)	• Food temperature: the core temperature of hot food is taken and recorded upon completion of regeneration. Min temperature +72C	No of compliant records per week / No of records per week Sample size: 100% per week Performance Tolerance: 0%	• Weekly: Measured and monitored departmental checklists/daily checks on 3 items per trolley. Monitored by regular, recorded random checks by supervisors and managers

		Record (Chilled Food)	• Temperature of any chilled food to be served cold is taken and recorded before service. Maximum temperature +8C	No of compliant records per week No of records per week Sample size: 100% per week Performance Tolerance: 0%	• Weekly: Measured and monitored departmental checklists/ daily checks on 3 items per trolley. Monitored by regular, recorded random checks by supervisors and managers
		Rejection Procedure	• Rejection procedure in respect of temperature controls are in place and actioned	No of occasions recorded No of occasions in sample Sample size: 100% per month Performance Tolerance: 10%	• Weekly: Measured using departmental checklist. Determined by default
	Pest Control	Infestation	• There is no evidence of infestation within food handling and associated areas	No of compliant random checks No of random checks in month. Sample size: 100% per month Performance Tolerance: 5%	• Monthly: Measured and monitored using departmental checklists. Monitored by checking traps. 4 checks per month. Compliance with pest control procedures
		Records	• Adequate records of sightings of pests and corrective actions taken are maintained	No of compliant occasions No of occasions in month. Sample size: 100% per month Performance Tolerance: 10%	• Monthly: Measured and monitored using departmental checklists.
	Cleaning	Hygienic Condition	• All areas of the catering department and all equipment within and associated with the catering services is maintained in a clean, hygienic condition at all times	No of compliant random checks No of random checks per week Sample size: 100% per month Performance Tolerance: 5%	• Monthly: Measured and monitored using departmental checklists. Monitored by regular, recorded random checks by supervisors and managers, covering whole department weekly
		Procedures Applied	• Cleaning procedures are in place and are known and applied by catering staff	No of compliant random checks No of random checks per week Sample size: 100% Performance Tolerance: 10%	• Monthly: Measured and monitored using departmental checklists. Monitored by regular, recorded random checks by supervisors and managers. 4 random checks per month

		Schedules	• Cleaning schedules are in place and applied	No of compliant random checks / No of random checks per month. Sample size: 100% Performance Tolerance: 15%	• Monthly: Measured and monitored using departmental checklists. Monitored by regular, recorded random checks by supervisors and managers. 4 random checks per month
		Disposal	• Disposable cleaning materials are discarded after use	No of compliant random checks / No of random checks per month. Sample size: 100% Performance Tolerance: 15%	• Monthly: Measured and monitored using departmental checklists. Monitored by regular, recorded random checks by supervisors and managers. 4 random checks per month
		Specified Equipment	• Cleaning equipment and agents are clearly defined for specific use	No of compliant items / No of items in sample Sample size: 100% per month Performance Tolerance: 10%	• Monthly: Measured and monitored using departmental checklists. Monitored by regular, recorded random checks by supervisors and managers. 4 random checks per month
		Equipment Storage	• Cleaning equipment and agents are stored in clearly defined areas away from food	No of compliant random checks / No of random checks in sample Sample size: 100% Performance Tolerance: 10%	• Monthly: Measured and monitored using departmental checklists. Monitored by regular, recorded random checks by supervisors and managers. 4 random checks per month
		Clean Equipment	• Cleaning equipment is thoroughly cleaned and dried immediately after use	No of compliant random checks / No of random checks per month. Sample size: 100% Performance Tolerance: 10%	• Monthly: Measured and monitored using departmental checklists. Monitored by regular, recorded random checks by supervisors and managers. 4 random checks per month
	Refuse Disposal	Segregation	• All refuse is correctly disposed of per segregated groups	No of compliant random checks / No of random checks per week. Sample size: 100% weekly Performance Tolerance: 10%	• Monthly: Measured and monitored using departmental checklists. Monitored by regular, recorded random checks by supervisors and managers. 4 random checks per month

		Removal	• Refuse and food waste is removed from catering department as soon as is practical	No of compliant random checks / No of random checks per week Sample size: 100% weekly Performance Tolerance: 10%	• Monthly: Measured and monitored using departmental checklists. Monitored by regular, recorded random checks by supervisors and managers. 4 random checks per month
	Dishwashing & Panwashing	Temperature Control	• Dishwash and panwash rinse temperatures are checked daily	No of compliant occasions / No of occasions in sample Sample size: 100% per month Performance Tolerance: 15%	• Monthly: Measured and monitored using departmental temperature records
		Clean Equipment	• All dishwashing/panwashing equipment and supporting equipment are cleaned after use	No of compliant occasions / No of occasions in sample Sample size: 100% per month Performance Tolerance: 15%	• Monthly: Measured and monitored using departmental checklists. Monitored by regular, recorded random checks by supervisors and managers. 4 random checks per month
		Machines' Control	• The dishwashing/panwashing machines are emptied after use and filters cleaned	No of compliant occasions / No of occasions in sample Sample size: 100% per month Performance Tolerance: 10%	• Monthly: Measured and monitored using departmental checklists. Monitored by regular, recorded random checks by supervisors and managers. 4 random checks per month
	Temperature Monitoring Equipment	Increment Scale	• All thermometers are scaled in increments of 0.1C	No of compliant records / No of records Sample size: 100% per week Performance Tolerance: 0%	• Weekly: Measured and monitored using departmental checklists and calibration records. 4 checks per month
		Calibrated Temperature	• Product temperature measuring systems are fully calibrated with an accuracy of +/-0.5C and assessed annually.	No of compliant items / No of items in sample Sample size: 100% Performance Tolerance: 0%	• Weekly: Measured and monitored using departmental checklists and calibration records. 4 checks per month
[4] Staff Meals Service	Menus	Various Choice	• Menus for staff and visitors, client hospitality and the range of vended food are varied and provide an agreed minimum level of choice for each outlet	No of actual menus/choices provided / No of agreed menus/choices Sample size: 15% per month	• Monthly: Measured using departmental checklists. Compliance with and application of agreed menus and choices

		Controlled Selection	• A choice is maintained throughout specified meal times	No of random checks / No of random checks in sample Sample size: 100% per week Performance Tolerance: 15%	• Weekly: Measured using departmental checklists. Minimum 3 choice availability checks per main meal period
	Vending Food	Appropriate Display	• Food items provided in vending facilities are attractively displayed and clearly labelled with description and price	No of compliant items / No of items in sample Sample size: 100% per week Performance Tolerance: 15%	• Weekly: Measured using departmental checklists. Minimum 3 vending compliance checks per day
	Presentation	Attractive Display	• All food is attractively displayed, served and garnished as appropriate	No of compliant random checks / No of random checks in sample Sample size: 100% Performance Tolerance: 10%	• Monthly: Measured and monitored using departmental checklist. Minimum 3 display compliance checks per main mealtime
		Appropriate Crockery	• All standard crockery and cutlery, as presented to individual patients, will be fit for intended purpose and will be sound and matching in colour and type	No of compliant checks / No of checks in sample Performance Tolerance: 15%	• Weekly: Minimum 1 daily crockery and cutlery check
	Food Serving	Excellent Service	• Visitors and staff are served quickly and courteously	No of satisfactory responses / Number of responses in sample 100% of staff surveyed Performance Tolerance: 15%	• Weekly: Measured and monitored using staff survey results
	Serving Areas	Hygiene	• The dining and serving areas are maintained in an appropriately clean, attractive and tidy condition at all operational times	No of compliant random checks / No of random checks in sample Sample size: 100% Performance Tolerance: 15%	• Monthly: Measured and monitored using departmental checklist. Minimum 3 display compliance checks per main mealtime
	Request	Prompt Response	• All hospitality requests (snacks and beverages) are delivered within +/- 10 mins (subject to a minimum of 4 hours' notice) or as agreed	No of compliant occasions / No of occasions in sample Sample size: 100% Performance Tolerance: 15%	• Monthly: Measured using data from function checklist. Monitored by catering managers through documentation inspection.
			• All function requests are delivered within +/- 10 mins (subject to a minimum of 12 hours' notice) or as agreed	No of compliant occasions / No of occasions in sample Sample size: 100% Performance Tolerance: 15%	• Monthly: Measured using data from function checklist. Monitored by catering managers through documentation inspection.

	Temperature Control	Serving Temperature	• All hot food is served above +63C	No of compliant occasions / No of occasions in sample Sample size: 100% Performance Tolerance: 15% Rectification Time: 5 mins	• Monthly: Measured using data from function checklist. Monitored by catering managers through documentation inspection.
			• All cold food is served at an acceptable temperature but not exceeding +8C	No of compliant occasions / No of occasions in sample Sample size: 100% Performance Tolerance: 15% Rectification Time: 5 mins	• Monthly: Measured using data from function checklist. Monitored by catering managers through documentation inspection.
	Satisfaction Survey	Survey Conduct	• Satisfaction surveys will be undertaken over each monthly period representing 10% of consumers	No of actual surveys / Number of comments received Sample size: 100% per month Performance Tolerance: 15%	• Monthly: Measured using data from comment cards/ satisfaction questionnaires
		Satisfaction Targets	• Visitors and staff are satisfied with the functions/hospitality service in respect of quality, composition and volume based upon analysis of completed questionnaires	No of satisfactory comments / Number of scheduled surveys in sample Sample size: 100% per month Performance Tolerance: 15%	• Monthly: Measured using data from comment cards/ satisfaction questionnaires
		Results	• The results of satisfaction surveys, as reviewed and confirmed by a user group representative, are in excess of 85%	Results of Survey Performance Tolerance: 15%	• Monthly: Measured using data from comment cards/ satisfaction questionnaires
	Vending Food	Attractive Display	• Food items provided in vending facilities are attractively displayed and clearly labelled with description and price	No of compliant items / No of items in sample Sample size: 100% per week Performance Tolerance: 15%	• Weekly: Measured using departmental checklists. Minimum 3 vending compliance checks per day
[5] Office Catering	Service Request	Request Standards	All requests must be delivered promptly and meeting the following conditions: • Catering service for meeting or formal function is not late by more than 10 minutes after the booked time	No of satisfactory responses / Number of responses in sample 100% of staff surveyed Performance Tolerance: 15%	• Weekly: Measured and monitored using staff survey results and monthly performance report

			• All agreed customer requirements, including quantity of food and service are supplied accordingly • Relevant details of persons ordering catering services for meetings and conferences are kept on record		
[6] Daily Catering	Presentation	Food	• All food was attractively displayed, served and garnished as appropriate	No of compliant random checks / No of random checks in sample Sample size: 100% Performance Tolerance: 10%	• Monthly: Measured and monitored using departmental checklist. Minimum 3 display compliance checks per main mealtime
	Mealtime Audit	Breakfast & Lunch	• Correct information was displayed as required • Customer must not spend more than 5 minutes in a queue whilst collecting food from normal daily menu • Food requested from full choice on normal daily menu must be available within 10 minutes of demand • Customers must not wait more than 3 minutes in the queue to pay	No of compliant random checks / No of random checks in sample Sample size: 100% Performance Tolerance: 10%	• Monthly: Measured and monitored using departmental checklist. Minimum 3 compliant checks per main mealtime
	Customer Satisfaction Questionnaire (Quarterly)	Service Standards	• The availability of catering facility during advertised hours • Choice of menu was available for main meals • Time taken in queue, waiting to be attended and waiting for food to be served • Members of the catering staff were polite and courteous	No of actual surveys / Number of comments received Sample size: 100% per month Performance Tolerance: 15%	• Monthly: Measured using data from comment cards/ satisfaction questionnaires
		Quality of Food and Facilities	• Food was served at the appropriate temperature • Food of a satisfactory quality • Choice/Variety/Range of food was satisfactory	No of actual surveys / Number of comments received Sample size: 100% per month Performance Tolerance: 15%	• Monthly: Measured using data from comment cards/ satisfaction questionnaires

			• Menu prices offered value for money compared with nearby establishments • Acceptable dining and serving area environment		
[7] Drinks Section	Audit	Service Requirement	• Customers must not be left unreasonably waiting for more than 3 minutes after their arrival before they are attended to • Published stocks must be at least 95% available • Bar service must be available at its specified operation time	No of compliant random checks / No of random checks in sample Sample size: 100% Performance Tolerance: 10%	• Monthly: Measured and monitored using departmental checklist. Minimum 3 compliant checks per audit
	Customer Satisfaction Questionnaire (Survey)	Service Standards	• Accurate tariff information was displayed • The availability of items on the tariff list upon request • Time taken to be attended • Courteous service	No of actual surveys / Number of comments received Sample size: 100% per month Performance Tolerance: 15%	• Monthly: Measured using data from comment cards/ satisfaction questionnaires
		Quality of Food & Facilities	• Drinks were served at the right temperature • Drinks were of a satisfactory quality • Choice/Variety/Range of drinks was satisfactory • Drink prices offered value for money compared with nearby establishments • Acceptable environment	No of actual surveys / Number of comments received Sample size: 100% per month Performance Tolerance: 15%	• Monthly: Measured using data from comment cards/ satisfaction questionnaires
[8] Vending	Audit	Monthly Audit	• All of the outlets must be restocked, serviced and dispensed by 7.30 each morning	No of compliant random checks / No of random checks in sample Sample size: 100% Performance Tolerance: 10%	• Monthly: Measured and monitored using departmental checklist.
	Machinery Downtime	Product Availability	• All products must be consistently available	• Total culpable downtime shall not exceed 5%	• Monthly: Measured and monitored using departmental checklist.

	Customer Satisfaction Questionnaire (Survey)	Service Standards	• Accurate tariff information was displayed • The availability or unavailability of items on the tariff board were indicated accordingly • The vending machine was working or otherwise is clearly indicates as being out of order	No of actual surveys Number of comments received Sample size: 100% per month Performance Tolerance: 15%	• Monthly: Measured using data from comment cards/ satisfaction questionnaires
		Quality of Food & Facilities	• Food and drinks are received at the right temperature • Provisions were of a satisfactory quality • Choice/Variety/Range of drinks were satisfactory • Prices offered value for money compared with nearby establishments	No of actual surveys Number of comments received Sample size: 100% per month Performance Tolerance: 15%	• Monthly: Measured using data from comment cards/ satisfaction questionnaires
ADDITIONAL FOR HEALTHCARE					
[1] Management	Safety & Hygiene	Statutory Standards	• Staff maintain statutory standards of food safety and personal hygiene at all times	No of compliant random checks No of random checks per month Sample size: 100% Performance Tolerance: 5%	• Daily: Measured using departmental checklists. Monitored by regular, recorded random checks by managers and supervisors
[2] Purchased Goods	Commodities	Purchasing of Resources	• All food and ingredients are purchased from Approved Supply Sources except where specifically requested by the client/hospital	No of compliant occasions in month No of occasions in month Sample size: 20% per month Performance Tolerance: 5%	• Monthly: Measured and monitored using purchase order system and approved supplier list
		Menu Description	• All food and ingredients are appropriate to the menu description and recipe for which they are intended	No of justified complaints No of meal types in month Sample size: 100% per month Performance Tolerance: 15%	• Monthly: Measured and monitored using purchase order system, agreed menus and recipes

	Goods In	Thorough Checks	• All incoming goods are thoroughly checked regarding quantity, general quality and damage, date markings, pest damage/infestation, temperature	No of compliant checks in week / No of checks in week Sample size: 100% per week Performance Tolerance: 10%	• Monthly: Measured and monitored using reported element of Purchase Order System
		Delivery Record	• Procedures are in place and applied to reject and record goods deliveries which are defective in any respect	No of actual compliant occasions per week / No of occasions in week Sample size: 100% per week Performance Tolerance: 10%	• Monthly: Measured and monitored using reported element of Purchase Order System
		Package Removal	• All external packaging is removed before placing goods in storage	No of compliant random checks / No of random checks per week Sample size: 100% per week Performance Tolerance: 15%	• Weekly: Measured using departmental checklist. Monitored by regular, recorded random checks by supervisors and managers. 4 random checks per month
		Labelled Containers	• All containers to which goods are transferred are clearly marked to identify content and storage date	No of compliant random checks / No of random checks per week Sample size: 100% per week Performance Tolerance: 10%	• Weekly: Measured and monitored using reported elements of purchase order system. Monitored by regular, recorded random checks by supervisors and managers. 4 random checks per month
	Stock	Stock Control	• Procedures are in place and applied to ensure satisfactory rotation and control of stocks	No of compliant random checks / No of random checks per week Sample size: 100% per week Performance Tolerance: 15%	• Weekly: Measured using departmental checklist. Monitored by regular, recorded random checks by supervisors and managers. 4 random checks per month
	Storage	Appropriate Storage	• All frozen or chilled goods are placed in appropriate storage within 15 mins of delivery	No of compliant occasions in sample / No of occasions in sample Sample size: 100% per week Performance Tolerance: 10%	• Weekly: Measured and monitored using reported elements of purchase order system. Monitored by regular, recorded random checks by supervisors and managers. 4 random checks per month

			• All non-temperature critical goods are placed in appropriate storage within 4 hours	No of compliant occasions in sample / No of occasions in sample Sample size: 100% per week Performance Tolerance: 10%	• Weekly: Measured and monitored using reported elements of purchase order system. Monitored by regular, recorded random checks by supervisors and managers. 4 random checks per month
			• All goods are stored in appropriate and suitably defined areas	No of compliant random checks / No of random checks per week Sample size: 100% per week Performance Tolerance: 10%	• Weekly: Measured and monitored using reported elements of purchase order system. Monitored by regular, recorded random checks by supervisors and managers. 4 random checks per month
			• All goods are stored on or in suitable shelving, pallets or containers	No of compliant random checks / No of random checks per week Sample size: 100% per week Performance Tolerance: 10%	• Weekly: Measured and monitored using reported elements of purchase order system. Monitored by regular, recorded random checks by supervisors and managers. 4 random checks per month
[3] Patient Meal Service	Patients Charter Standards	Standards	• Patients are able to request and receive from a range of light meals and snack boxes that are available at all times	No of compliant occasions / No of occasions in sample Sample size: 100% per month Performance Tolerance: 10% Service Response times: 30 mins	• Monthly: Measured and monitored using departmental checklists. Compliance with Patients Charter
		Information	• Patients are given a written explanation of the Patient Catering Services provided, in accordance with Better Hospital Food Policy	No of compliant occasions / No of occasions in sample Sample size: 100% per month Performance Tolerance: 10%	• Monthly: Measured and monitored using departmental checklists. Compliance with Patients Charter
			• Patients are provided with a written summary of the client's Food and Nutrition Policy	No of compliant occasions / No of occasions in sample Sample size: 100% per month Performance Tolerance: 10%	• Monthly: Measured and monitored using departmental checklists.

		Balanced Menu Order	• Menus are well balanced and provide the agreed minimum level of choice at the point of service, appropriate to patients' needs and in accordance with the NHS Plan and Better Hospital Food	No of compliant occasions / No of occasions in sample Sample size: full menu cycle Performance Tolerance: 15%	• Quarterly: Measured and monitored using departmental checklists. Compliance with and application of appropriate Dietetic and National Guidelines. Compliance with Patients Charter and Ministry of Health Plan. • Results of Patient Surveys.
		Informative Menus	• Menus are provided in/translated into other languages and large print, as may be required, to assist all patients in making an informed choice at service time in compliance with the requirements of Better Hospital Food	No of compliant requests / No of requests in sample Sample size: full menu cycle Performance Tolerance: 10%	• Quarterly: Measured and monitored using Menu Cycle
			• Menu items are described fully and correctly	No of compliant items / No of items in sample Sample size: full menu cycle Performance Tolerance: 15%	• Monthly: Measured and monitored using Menu Cycle
		Meals Selection	• Patients choose their own meals from day of admission, subject to arrival on the ward 2 hours before next scheduled meal time and subject to clinical constraints	No of actual occasions / No of occasions in sample Sample size: 100% of patients surveyed Performance Tolerance: 15%	• Monthly: Measured and monitored using Menu Cycle and Results of Patient Surveys
			• Patients are required to order their meal requirements no more than two meals in advance	No of compliant occasions / No of occasions in sample Sample size: 100% of patients surveyed Performance Tolerance: 10%	• Monthly: Measured and monitored using Results of Patient Surveys
			• Patients have a choice, and receive, the portion size they request	No of compliant occasions / No of occasions in sample Sample size: 100% of patients surveyed Performance Tolerance: 10%	• Monthly: Measured and monitored using Results of Patient Surveys. Compliance with and application of appropriate dietetic and nutritional guidelines

	On-Site Distribution	Clean Equipment	• Equipment used for meal distribution is kept in a hygienic condition	No of compliant random checks / No of random checks per week Sample size: 100% per month Performance Tolerance: 5%	• Monthly: Measured and monitored using departmental checklists. Monitored by reference to departmental records
		Schedule	• Commencement of food service occurs at scheduled times/within 10 minutes of completion of regeneration to the wards, unless varied by senior ward staff	No of compliant occasions / No of occasions in sample Sample size: 100% of patients surveyed Performance Tolerance: 15%	• Monthly: Measured and monitored using departmental checklist
	Presentation	Appropriate Crockery	• All standard crockery and cutlery, as presented to individual patients, will be fit for intended purpose and will be sound and matching in colour and type	No of compliant occasions / No of occasions in sample Sample size: 100% of patients surveyed Performance Tolerance: 15%	• Monthly: Measured and monitored using departmental checklist
	Dish Collection	Reasonable Period	• Used dishes are collected from patients within a reasonable time period (20 minutes) from the patient having finished the meal	No of compliant occasions / No of occasions in sample Sample size: 100% of patients surveyed Performance Tolerance: 15%	• Monthly: Measured and monitored using departmental checklist
	Satisfaction Survey	Routine Ward Visits	• Routine ward visiting will be undertaken by supplier managers and supervisors to ascertain patient opinion, and records of ward visits are maintained and action taken to reflect patient's opinion in service standards	No of actual visits / No of scheduled visits in sample Sample size: 100% per month Tolerance: 15%	• Monthly: Measured and monitored using departmental checklist
		Survey	• One to one surveys of patients satisfaction levels are undertaken monthly and represent a minimum of 10% of occupied bed numbers	Actual number of patients surveyed in period / 10% of occupied beds in period Performance Tolerance: 15%	• Monthly: Measured using occupied bed statistics and survey records

TECHNICAL	[T16] ACCESS & CIRCULATION				
Parameters	Metrics	Indicators	Attributes	Formula/Target	Monitoring
[1] Access	Lifts	Time to Arrive	• The average waiting time for a lift i.e. any lift at that lift location, to respond to a manual call button request is less than TBA.	• Response time < TBA • 3 measurements taken within a 10 minute period	• Weekly/Monthly: Measured and monitored using departmental checklist
		Alignment	• A lift stops no more than 40 mm from horizontal floor level	In the event of problems which cause a significant H&S risk, or security risk (i.e. people trapped in lift) • Urgent Priority: Grace Period is 2 Core Hours in Core Hour Areas, 2 Hours in 24 Hour Areas, except 45 minutes at any time for entrapment in a lift In the event of any other problems. • High Priority: Grace Period is 2 Working Days in Core Hour Areas, 24 Hours in 24 Hour Areas	• Weekly/Monthly: Measured and monitored using departmental checklist
	2) Escalators	Speed	• The speed of the handrail shall not deviate from the speed of the steps by more than 2%	In the event of problems which cause a significant H&S risk, or security risk (i.e. people trapped in lift) • Urgent Priority: Grace Period is 2 Core Hours in Core Hour Areas, 2 Hours in 24 Hour Areas, except 45 minutes at any time for entrapment in a lift In the event of any other problems. • High Priority: Grace Period is 2	• Weekly/Monthly: Measured and monitored using departmental checklist

				Working Days in Core Hour Areas, 24 Hours in 24 Hour Areas	
[2] Circulation	Fire Doors	Clearance	• The fire door has not been left propped open and that the fire door (doorway) has not been obstructed by the contractor such that there is no restriction on the speed of egress through the doors	In the event of problems which reduce access rate through fire doors, along corridors or down staircase. • Urgent Priority: Grace Period is 2 Core Hours in Core Hour Areas, 2 Hours in 24 Hour Areas In the event of any other circulation obstruction • High Priority: Grace Period is 4 Core Hours in Core Hour Areas, 4 Hours in 24 Hour Areas	• Weekly/Monthly: Measured and monitored using departmental checklist
	Stairs, Landing and Corridors	Obstruction Free	• The floor area within a corridor or landing zone is free of obstructions placed by the contractor which reduce the width of the corridor to less than relevant and adjacent fire door widths or places on a staircase	In the event of problems which reduce access rate through fire doors, along corridors or down staircase. • Urgent Priority: Grace Period is 2 Core Hours in Core Hour Areas, 2 Hours in 24 Hour Areas In the event of any other circulation obstruction • High Priority: Grace Period is 4 Core Hours in Core Hour Areas, 4 Hours in 24 Hour Areas	• Weekly/Monthly: Measured and monitored using departmental checklist

TECHNICAL	[T17] FURNITURE AND FIXTURES & FITTINGS				
Parameters	Metrics	Indicators	Attributes	Formula/Target	Monitoring
[1] Furniture	Functionality	Fully Functioning	• Items are checked regarding whether they are able to function fully or partly	In the event of defects found in occupied office or public areas in daily use that cause significant H&S risk or which prevent the item from functioning at all. • Urgent Priority: Grace Period is 2 Core Hours in Core Hour Areas, 2 Hours in 24 Hour Areas In the event of any other defects. • Routine Priority: Grace Period is 2 Working Days in Core Hour Areas, 16 Hours in 24 Hour Areas	• Weekly/Monthly: Measured and monitored using departmental checklist
	Condition	No Defects	• Items are checked from the safety aspect i.e. not broken, no sharp or jagged edges which can easily cause human injury or damage to clothing	In the event of defects found in occupied office or public areas in daily use that cause significant H&S risk or which prevent the item from functioning at all. • Urgent Priority: Grace Period is 2 Core Hours in Core Hour Areas, 2 Hours in 24 Hour Areas In the event of any other defects. • Routine Priority: Grace Period is 2 Working Days in Core Hour Areas, 16 Hours in 24 Hour Areas	• Weekly/Monthly: Measured and monitored using departmental checklist
	Safety	Good Appearance	• Items are ensured to be in acceptable appearance (minor defects and blemishes, reasonable	In the event of defects found in occupied office or public areas in daily use that cause significant	• Weekly/Monthly: Measured and monitored using departmental checklist

			appearance permitted, providing appearance has not deteriorated to the extent of needing replacement)	H&S risk or which prevent the item from functioning at all. • Urgent Priority: Grace Period is 2 Core Hours in Core Hour Areas, 2 Hours in 24 Hour Areas In the event of any other defects. • Routine Priority: Grace Period is 2 Working Days in Core Hour Areas, 16 Hours in 24 Hour Areas	
	Moving out	User's Agreements	• Any furniture or equipment is moved out or set out as requested within any part of the hospital sites and within specific Service Response Time, or as agreed with the user	No of compliant occasions / No of occasions in sample Sample size: 100% Performance Tolerance: 15% Service Response Time: 20 mins	• Monthly: Measured and monitored using departmental checklist
[2] Circulation	Functionality	Fully Functioning	• Items are checked regarding whether they are able to function fully or partly	In the event of defects found in occupied office or public areas in daily use that cause significant H&S risk or which prevent the item from functioning at all. • Urgent Priority: Grace Period is 4 Core Hours in Core Hour Areas, 4 Hours in 24 Hour Areas In the event of any other defects. • Routine Priority: Grace Period is 2 Working Days in Core Hour Areas, 16 Hours in 24 Hour Areas	• Monthly: Measured and monitored using departmental checklist

	Condition	No Defects	• Items are checked from the safety aspect i.e. not broken, no sharp or jagged edges which can easily cause human injury or damage to clothing	In the event of defects found in occupied office or public areas in daily use that cause significant H&S risk or which prevent the item from functioning at all. • Urgent Priority: Grace Period is 4 Core Hours in Core Hour Areas, 4 Hours in 24 Hour Areas In the event of any other defects. • Routine Priority: Grace Period is 2 Working Days in Core Hour Areas, 16 Hours in 24 Hour Areas	• Monthly: Measured and monitored using departmental checklist
	Safety	Good Appearance	• Items are ensured to be in acceptable appearance (minor defects and blemishes, reasonable appearance permitted, providing appearance has not deteriorated to the extent of needing replacement)	In the event of defects found in occupied office or public areas in daily use that cause significant H&S risk or which prevent the item from functioning at all. • Urgent Priority: Grace Period is 4 Core Hours in Core Hour Areas, 4 Hours in 24 Hour Areas In the event of any other defects. • Routine Priority: Grace Period is 2 Working Days in Core Hour Areas, 16 Hours in 24 Hour Areas	• Monthly: Measured and monitored using departmental checklist
	Elements' Functionality	Internal Walls & Partitions	• All are structurally sound • No sharp protrusions which are likely to cause injury	$\frac{\text{No of compliant occasions}}{\text{No of occasions in sample}}$ Sample size: 100% Performance Tolerance: 15% Service Response Time: 30 mins	• Monthly: Measured and monitored using departmental checklist

		Internal Doors	• All are closable/and can be opened (and lockable where applicable) i.e. operable as intended • No sharp protrusions which are likely to cause injury	No of compliant occasions / No of occasions in sample Sample size: 100% Performance Tolerance: 15% Service Response Time: 30 mins	• Monthly: Measured and monitored using departmental checklist
		Ceiling Finishes	• Support system is intact • No holes or falling materials which are a H&S risk • No missing panels, no unsightly marks or patches	No of compliant occasions / No of occasions in sample Sample size: 100% Performance Tolerance: 15% Service Response Time: 30 mins	• Monthly: Measured and monitored using departmental checklist
		Floor Finishes (Carpets, carpet tiles, vinyl flooring, hard flooring)	• All are adequately secured to sub-floor • No trip hazards	No of compliant occasions / No of occasions in sample Sample size: 100% Performance Tolerance: 15% Service Response Time: 30 mins	• Monthly: Measured and monitored using departmental checklist
		Wall Finishes	• All are adequately secured to wall structure • No holes or falling materials which are a H&S risk	No of compliant occasions / No of occasions in sample Sample size: 100% Performance Tolerance: 15% Service Response Time: 30 mins	• Monthly: Measured and monitored using departmental checklist
		Fittings & Furnishings (Shelves fixed to brick/block/stone walls, window blinds, fire fighting equipments	• All can be closed and opened, and when there is a design requirement and all sub-elements are operable as intended • All are securely fixed (where intended to be fixed)	No of compliant occasions / No of occasions in sample Sample size: 100% Performance Tolerance: 15% Service Response Time: 30 mins	• Monthly: Measured and monitored using departmental checklist

TECHNICAL	[T18] PORTERING				
Parameters	Metrics	Indicators	Attributes	Formula/Target	Monitoring
[1] General Portering	Move Requests	Goods	• All reasonable requests to be completed by the end of the following working day • Goods to be received by addressee undamaged and/or unopened by the contractor • Item moved to requested location	In the event of security related problems. • Urgent Priority: 1 Hour within Normal Working Hours In the event of any non-security related problems. • High Priority: 4 Hours within Normal Working Hours. Outside Working Hours, problems to be rectified within 4 Hours of the start of the following day.	• Weekly/Monthly: Measured and monitored using departmental checklist
	Arrangement	Setting Up Barriers & Sign	• Set up is in the requested location • Set up is in accordance with the client's specification • Set up has been carried out by the requested time • Removal has been carried by the agreed time • Set up presents no H&S risk to users	In the event of security related problems. • Urgent Priority: 1 Hour within Normal Working Hours In the event of any non-security related problems. • High Priority: 4 Hours within Normal Working Hours. Outside Working Hours, problems to be rectified within 4 Hours of the start of the following day.	• Weekly/Monthly: Measured and monitored using departmental checklist
ADDITIONAL FOR HEALTHCARE					
[1] Movement Duties	Movement of Patients	Handling	• Patients are transferred between wards and departments and A&E and the helipad by appropriately trained portering Staff using appropriate transport i.e. chairs, trolleys and beds	No. of compliant random checks / No. of random checks per month Performance Tolerance: 5%	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
			• Due care is exercised when moving patients and assisting with lifting	No. of compliant random checks / No. of random checks per month	• Monthly: Measured using the departmental checklist.

			patients in accordance with hospital policy	Performance Tolerance: 5%	Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
		Staff Assistance	• Portering staff adopt a pleasant manner and attitude when dealing with patients or staff	No of satisfactory responses / Number of responses in sample 100% of staff surveyed Performance Tolerance: 15%	• Monthly: Measured and monitored using staff survey results
			• Portering staff attend to requests for urgent movement of patients (and where the request does not ask for attendance with additional equipment) as determined by clinicians, within specified Service Response Time	No. of requests complied within sample / No. of requests in sample Sample Size: 100% per week Performance Tolerance: 10% Service Response Time: 10 mins	• Monthly: Measured and monitored using Helpdesk Log
			• Portering staff attend to requests for urgent movement of patients (and where the request asks for attendance with additional equipment) as determined by clinicians, within specified Service Response Time	No. of requests complied within sample / No. of requests in sample Sample Size: 100% per week Performance Tolerance: 10% Service Response Time: 20 mins . Thereafter 15 mins	• Monthly: Measured and monitored using Helpdesk Log
			• Portering staff carry out routine movement of patients and respond as required to requests for routine and ad hoc movement from wards/departments within specified Service Response Time	No. of requests complied within sample / No. of requests in sample Sample Size: 100% per week Performance Tolerance: 10%	• Monthly: Measured and monitored using Helpdesk Log
	Departments	Compliance	• Portering movements from one department to another comply with the requirements of this schedule	No of compliant movements / Total number of movements using Helpdesk records Representative random sample size	• Monthly: Measured and monitored using departmental checklists.
	Miscellaneous Duties	Clinical Equipment Delivery	• Clinical equipment or any other miscellaneous items are collected for delivery, without undue delay, to and from any part of the hospital sites as	No. of requests complied within sample / No. of requests in sample Sample Size: 100% per week	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers

			requested and within specified Service Response Time	Performance Tolerance: 10% Service Response Time: 2 hours	and supervisors. 4 random checks per month
		Furniture & Equipment Delivery	• Non-clinical furniture or equipment is moved or set out as requested within any part of the hospital sites and within specific Service Response time, or as agreed with the user	No. of requests complied within sample --- No. of requests in sample Sample Size: 100% per week Performance Tolerance: 10% Service Response Time: 8 hours	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
		Clinical Notes Delivery	• Clinical notes are collected for delivery, without undue delay, upon request and within specified Service Response Times	No. of requests complied within sample --- No. of requests in sample Sample Size: 100% per week Performance Tolerance: 10% Service Response Time: 8 hours	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
[2] Medical Gas Service	Replacement	Availability	• Medical gas replacements are available 24 hours a day all year and gas replacement requests are met within agreed Service Response Time specified	No. of requests complied within sample --- No. of requests in sample Sample Size: 100% per week Performance Tolerance: 10% Service Response Time: 20 mins	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
[3] Specimens & Bloods	Collection	Policy Adherence	• Staff adhere to the client policy on the Collection and Handling of Specimen	No of compliant random checks --- No of random checks per month Performance Tolerance: 5%	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
		Agreed Schedule	• Specimens are collected to an agreed schedule from wards and delivered to the specified destination within the hospital	No of requests complied within sample --- No of requests in sample Sample size: 20% per week Performance Tolerance: 5%	• Weekly: Measured and monitored using Helpdesk Log
			• Laboratory supplies are transported to wards within specified times	No of requests complied within sample --- No of requests in sample Sample size: 20% per week Performance Tolerance: 5%	• Weekly: Measured and monitored using Helpdesk Log

		Ad-hoc Request	• Specimens are collected in response to an ad-hoc request from wards for delivery, without undue delay, to the specified destination within the hospital	No of requests complied within sample / No of requests in sample Sample size: 20% per week Performance Tolerance: 5%	• Weekly: Measured and monitored using Helpdesk Log
			• Blood products and empty specimen containers, requested on an ad hoc basis, are collected for delivery, without undue delay, to wards within the service Specified Response Time	No of requests complied within sample / No of requests in sample Sample size: 10% per week Performance Tolerance:10%	• Weekly: Measured and monitored using Helpdesk Log
		Prompt Transfer	• Portering staff collect, for transfer without undue delay, X-rays between Imaging and wards and departments upon request within agreed Service Response Time	No of requests complied within sample / No of requests in sample Sample size: 20% per week Performance Tolerance: 5%	• Weekly: Measured and monitored using Helpdesk Log
[4] Mortuary Duties	Staff	Procedure	• Portering staff remove bodies from storage and prepare for viewing on request, and return to storage when viewing complete	No of requests complied with / No of requests Sample size: 100% per week Performance Tolerance: 10% Service Response Time: 20 mins	• Weekly: Measured and monitored using Helpdesk Log
		Records	• All relevant details are entered in the mortuary register	No of compliant entries / No of entries Sample size: 100% per week Performance Tolerance: 5%	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
		Assistance	• Portering staff assist the undertaker to complete register as appropriate	No of compliant random checks / No of random checks per month Performance Tolerance: 5%	• Weekly: Measured and monitored using Helpdesk Log
		Manners	• At all times portering staff behave in a respectful manner	No of compliant random checks / No of random checks per month Performance Tolerance: 5%	• Weekly: Measured and monitored using Helpdesk Log

	Transport	Specified Arrangement	• Bodies are transported from wards to mortuary as specified	No of requests complied with / No of requests Sample size: 100% per week Performance Tolerance: 10%	• Monthly: Measured and monitored using Helpdesk Log
[5] Duties in Accident & Emergency (A&E)	Staff Assistance	Full Time Service	• 24-hour service provided by dedicated portering staff	No of requests complied with / No of requests Sample size: 100% per week Performance Tolerance: 10% Rectification Time: 15 mins	• Weekly: Measured and monitored using Helpdesk Log
		Contact Tasks	• Portering staff undertake the full range of patient contact tasks required in A&E with the resources scheduled to be available	No of requests complied with / No of requests Sample size: 100% per week Performance Tolerance: 10% Service Response Time: 5 mins	• Weekly: Measured and monitored using Helpdesk Log
		Prompt Assistance	• As necessary, portering staff accept bodies that are brought in from ambulance staff and assist the police within the specified Service Response Time with the resources scheduled to be available	No of requests complied with / No of requests Sample size: 100% per week Performance Tolerance: 10% Service Response Time: 10 mins	• Weekly: Measured and monitored using Helpdesk Log
		Support Task	• Portering staff undertake the full range of Department support tasks with the resources scheduled to be available	No of requests complied with / No of requests Sample size: 100% per week Performance Tolerance: 10% Service Response Time: 10 mins	• Weekly: Measured and monitored using Helpdesk Log
[6] Equipment & Cleaning	Provision	Maintained Cleanliness	• All cleaning equipment including trucks, trolleys, as may at any time be necessary for the provision of portering services, is provided, kept appropriately clean and correctly maintained	No of compliant pieces of equipment in sample / No of pieces of equipment in sample Representative random sample size	• Weekly: Measured and monitored using departmental checklists. All equipment will be logged, checked they are only being used in specified areas and maintenance recorded
	Compliance	Standard of Practice	• Equipment complies with the relevant British and European Standard Specification and codes of practice, or acceptable alternative	No of compliant pieces of equipment in sample / No of pieces of equipment in sample Representative random sample size	• Weekly: Measured and monitored using departmental checklists. All equipment will be logged, checked they are only being used in specified areas and maintenance recorded

[7] Medical Gas Service	Transport	Secured Transfer	• Medical gas cylinders are transported in a safe and secure manner at all times	Reported non-compliant incidents	• Monthly: Measured and monitored using departmental records
	Handling	Trained Staff	• Portering staff are suitably trained in the storage and handling of medical gas supplies	No of compliant training records in sample / No of staff in sample Representative random sample size	• Monthly: Measured and monitored using training records

TECHNICAL	[T19] MAIL				
Parameters	Metrics	Indicators	Attributes	Formula/Target	Monitoring
[1] Mail Processing	Process Observation	Agreed Schedule	• All outgoing mail, external and internal, must have been fully processed by the set out and agreed collection/dispatch times. The audit team will arrive in the processing centre as a delivery arrives to follow its process through to collection/dispatch	No of compliant random checks / No of random checks per month Performance Tolerance: 5%	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
		Incident Control	• Nil incidence of non-dispatch of mail from the main processing centre. Inspection will be made to ensure no mail remains in the processing centre without a valid reason	No of compliant random checks / No of random checks per month Performance Tolerance: 5%	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
		Procedure Adherence	• All procedures as set out in the contractor's approved method statement, including handling of damaged and improperly addressed mail, complied with	No of compliant random checks / No of random checks per month Performance Tolerance: 5%	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
	Record Inspection	Updated Records	• A record of all recorded and special delivery mail is complete and up-to-date, with details such as names and signatures of the receiving or sending authorities' personnel • A record of 'out of hours' service is complete and up-to-date	No of compliant random checks / No of random checks per month Performance Tolerance: 5%	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
		Authorised Collection	• No incidence of inadequately authorised registered/recorded mail by appropriate authority personnel being sent • No incidence of registered/recorded mail being received, unless signed for by appropriate authority personnel	No of compliant random checks / No of random checks per month Performance Tolerance: 5%	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month

	Security Requirements	Secured Storage	• All mail is secured and stored in the event of non-collection/despatch, either internal or external i.e. if mail is received by processing centre after the last collection/despatch	No of compliant random checks No of random checks per month Performance Tolerance: 5%	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
		Incident Control	• Security requirements fully complied with i.e. no incidence of mail being left unattended, or not secure	No of compliant random checks No of random checks per month Performance Tolerance: 5%	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
[2] Mail Delivery & Collection	Process Standard	Scheduled Delivery	All processes must conform to the requirements set by the client: • Any internal mail collected before 1300 is delivered no later than 4 hours after pick up • Internal mail collected after 1300 is delivered to mail points before 9.30am the following working day • Mail arrives at the mail delivery point unopened and/or undamaged by the contractor • IMMEDIATE mail and splash Signals are to be delivered immediately • PRIORITY mail is to be delivered within 30 MINUTES • ROUTINE mail is to be delivered within 1 hour • Mail should arrive at the addressee unopened and undamaged	No of compliant random checks No of random checks per month Performance Tolerance: 5% In the event of any issues concerning Immediate Mail & Signals. • Urgent Priority: For Immediate Mail and Signals, 1 Core Hour in Core hour Areas and 1 Hour in 24 Hour Areas. For all other mail, 1 Core Hour. In the event where mail was delivered to the wrong people due to contractor error, or queries concerning lost and damaged mail. • High Priority: 2 Core Hours In the event of any other fault. • Routine Priority: 8 Core Hours	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
[3] Executive Suite Personal Messenger	Appearance	Service Requirements	• A personal messenger to the Secretary of State is available within 10 minutes of being contacted, 24 hours per day	No of compliant random checks No of random checks per month Performance Tolerance: 5%	• Weekly: Measured and monitored using Helpdesk Log

			• Messengers are appropriately attired • Messengers are knowledgeable • Messengers are polite		
ADDITIONAL FOR HEALTHCARE					
[1] Mail Service	Mail Processing	Correct Handling (Mail & Parcels)	• All mail and parcels are correctly collected, sorted and delivered to and from wards/departments as scheduled	No of compliant deliveries in sample --- No of deliveries in sample Problems caused by Post Office are recorded and not included Performance Tolerance: 10%	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
			• Mail and parcels are sorted and available for collection by wards and departments within 20 minutes of Scheduled Times	No of compliant records per month --- No of records per month Representative random sample size	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
		Safekeeping (Letters & Faxes)	• All recorded and registered letters and faxes are kept secure and made available for signature and collection by wards and departments	No of compliant records per month --- No of records per month Representative random sample size	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month

TECHNICAL	[T20] RECEIPT & DISTRIBUTION				
Parameters	Metrics	Indicators	Attributes	Formula/Target	Monitoring
[1] Administration & Management	Product Recall System	Updated System	• Product recall systems in respect of faulty goods and products or those subject to hazard notices are in place, effective and records maintained	No. of compliant occasions in period / No. of occasions in period	• Monthly: Measured and monitored using departmental checklists
	Response	Prompt Attendance	• All major incidents or emergency requests for goods and products are responded to within 1 hour	No of compliant random checks / No of random checks per month Performance Tolerance: 5% Response Time: 1 hour	• Weekly: Measured and monitored using Helpdesk Log
[2] Equipment & Cleaning	Safekeeping	Appropriate Standard	• All receipt and distribution service equipment is kept clean to a standard appropriate for the goods transported and stored.	No. of compliant pieces of equipment in sample / No. of pieces of equipment in sample Representative random sample size Rectification time: 2 hours	• Weekly: Measured and monitored using departmental checklist
[3] Receipt & Distribution Process	Records	Maintain Records	• Records are maintained, including details of delivery performance	No. of compliant records / No. of records in sample (100%)	• Monthly: Measured and monitored using departmental checklist
	Storage	Secured Storage	• All goods and products are secured upon receipt pending distribution	No. of compliant records / No. of records in sample (100%)	• Monthly: Measured and monitored using departmental checklist
	Surveillance	Standard Conditions	• All goods and products in the contractor's areas are under suitable conditions all the time.	No. of compliant records / No. of records in sample (100%) Rectification time: 30 minutes	• Weekly: Measured and monitored using departmental checklist
	Delivery	Appropriate Handling	• All deliveries to departments are unpacked and placed in designated storage, and packaging waste removed	No. of compliant occasions in period / No. of occasions in period Rectification time: 30 minutes	• Monthly: Measured and monitored using departmental checklists
		Schedule	• Deliver compliant goods and products to delivery points in line with pre-arranged delivery schedules and quantities	No. of compliant occasions in period / No. of occasions in period Rectification time: 30 minutes	• Monthly: Measured and monitored using departmental checklists

TECHNICAL	[T21] PRINTING/REPROGRAPHICS				
Parameters	Metrics	Indicators	Attributes	Formula/Target	Monitoring
[1] Service Process	Timeliness	Specified Request	• Service provided within the specified time limit, or as otherwise agreed • Number of copies requested are correct	In the event of any problems with photocopiers, which cause a H&S risk or prevent the machine from functioning (applicable in Normal Working Hours). • Urgent Priority: 1 Core Hour in Core hour Areas and 1 Hour in 24 Hour Areas. In the event of breakdown of stand-alone photocopiers in high and medium category areas. • High Priority: 2 Core Hours In the event of breakdown of stand-alone photocopiers in low category areas. • Routine Priority: 8 Core Hours	• Monthly: Measured and monitored using the departmental checklist.
	Security	Security Compliance	• Security regulations are fully complied with during all the service, handling and handing over processes	In the event of any problems with photocopiers, which cause a H&S risk or prevent the machine from functioning (applicable in Normal Working Hours). • Urgent Priority: 1 Core Hour in Core hour Areas and 1 Hour in 24 Hour Areas. In the event of breakdown of stand-alone photocopiers in high and medium category areas. • High Priority: 2 Core Hours	• Monthly: Measured and monitored using the departmental checklist.

				In the event of breakdown of stand-alone photocopiers in low category areas. • Routine Priority: 8 Core Hours	
[2] Copies & Documents	Quality Requirements	Finished Standard	• Documents provided with correct finishes to enable effective use of them i.e. document bound if binding was requested • Documents provided with almost correct finishes to enable effective use of them i.e. with some additional work they can be used i.e. stapling omitted • Format correct i.e. paper size, colour, single/double sided • Pages assembled in correct sequence and orientation, as per the original • Detail and difference in tone not of a poorer quality than the original	In the event of any problems with photocopiers, which cause a H&S risk or prevent the machine from functioning (applicable in Normal Working Hours). • Urgent Priority: 1 Core Hour in Core hour Areas and 1 Hour in 24 Hour Areas. In the event of breakdown of stand-alone photocopiers in high and medium category areas. • High Priority: 2 Core Hours In the event of breakdown of stand-alone photocopiers in low category areas. • Routine Priority: 8 Core Hours •	• Monthly: Measured and monitored using the departmental checklist.
[3] Audits	Standard	Requirements	• Quality of copies not noticeably different from originals (test pattern to be used for this purpose) • Copy rate complies with the contractor's proposal • Copies and original documents are fed through the photocopier without sheets sticking together, being damaged or becoming jammed • Spare paper available and there is a record available indicating the time and quality of the last re-stocking, in accordance with timings and proposals set out in the technical	In the event of any problems with photocopiers which cause a H&S risk or prevent the machine from functioning (applicable in Normal Working Hours). • Urgent Priority: 1 Core Hour in Core hour Areas and 1 Hour in 24 Hour Areas. In the event of breakdown of stand-alone photocopiers in high and medium category areas. • High Priority: 2 Core Hours	• Monthly: Measured and monitored using the departmental checklist.

			specification • If a copier is broken, it has been broken for less than one working day	In the event of breakdown of stand-alone photocopiers in low category areas. • Routine Priority: 8 Core Hours	

TECHNICAL	[T22] INTERNAL PLANTING & DECORATIONS				
Parameters	Metrics	Indicators	Attributes	Formula/Target	Monitoring
[1] Internal Planting	Pots & Plants	Maintenance Standard	• Nil incidence of dead plants or where appropriate, dead foliage • Plants are to be free of dust where reasonably practicable • Plant pots are to be free of litter • The plants and plant pots are to be free of insects, infestations and disease • Plants have been pruned as appropriate	No of compliant random checks / No of random checks per month Performance Tolerance: 10%	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
[2] Internal Decorations	Office Decorations	Approved Criteria	• The decorations must have been approved by the management and do not pose a H&S risk to the users	No of compliant random checks / No of random checks per month Performance Tolerance: 10% •	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month

TECHNICAL	[T23] RECEPTION				
Parameters	Metrics	Indicators	Attributes	Formula/Target	Monitoring
[1] Main Entrances	Efficiency & Quality	Timeliness	The service staff are assessed based on their efficiency and quality of the service provided: • Visitors and large groups (who have provided 24 hours' prior notification) are assisted within 3 minutes of queuing • Visitor's host notified, using reasonable endeavours, within 5 minutes of visitor being assisted	No of compliant random checks / No of random checks per month Performance Tolerance: 10% • Compliance in providing assistance to the visitors	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
		Personnel Appearance & Demeanour	• Reception personnel are polite and knowledgeable • Reception personnel are uniformly attired	No of actual surveys / Number of comments received Sample size: 100% per month Performance Tolerance: 15%	• Monthly: Measured using data from comment cards/ satisfaction questionnaires
		Package Arrival	• Proper recording of package received • Addressee notified within 5 minutes of package arrival	No of compliant random checks / No of random checks per month Performance Tolerance: 10%	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
		Security	• Security regulations are fully complied with • Issuance of visitor passes and recording issues and retrievals in line with procedures required by the client	No of compliant random checks / No of random checks per month Performance Tolerance: 10%	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
[2] Support Services at Other Entrances (i.e. Loading Bay and	Efficiency & Quality	Delivery Requirements	The services are assessed based on their efficiency and quality of the service provided: • Nil incidence of damage to deliveries by the contractor • Deliveries do not wait more than 20	No of compliant random checks / No of random checks per month Performance Tolerance: 10%	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month

Security)			minutes after arrival due to contractor's inappropriate action • All accepted deliveries to Authority's personnel distributed within 1 working day of their arrival unless otherwise agreed with addressee		
		Personnel Appearance & Demeanour	• Reception personnel are polite and knowledgeable • Reception personnel are uniformly attired	No of actual surveys / Number of comments received Sample size: 100% per month Performance Tolerance: 15%	• Monthly: Measured using data from comment cards/ satisfaction questionnaires
		Package Arrival	• No instance of package being accepted without the prior approval of the recipient • Addressee notified within 5 minutes of package arrival	No of compliant random checks / No of random checks per month Performance Tolerance: 10%	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
		Security	• Security regulations are fully complied with • Issuance of visitor passes and recording issues and retrievals in line with procedures required by the client	No of compliant random checks / No of random checks per month Performance Tolerance: 10%	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month

TECHNICAL	[T24] OFFICE FACILITIES AND ACCOMODATION SERVICES				
Parameters	Metrics	Indicators	Attributes	Formula/Target	Monitoring
[1] Office Room Facilities	Internal & External Workspace Facilities	Booking Requirements	• Booking details confirmed back to event organiser • Size, time and location of facility as booked • IT and presentation equipment and other booked services provided as requested • Facilities are clean and tidy	In the event of any fault that means a meeting or conference (internal or external) cannot continue. • Urgent Priority: 15 minutes, during any time for which the facilities can be used In the event of any fault that disrupts a conference or meeting (internal or external) or the use of business suite. • High Priority: 30 minutes, within Normal Working Hours. Outside Working Hours fault to be rectified within 30 minutes of the start of normal working hours on the following working day. In the event of any fault that disrupts the use of workspaces. • Routine Priority: 1 Hour within Normal Working Hours. Outside Working Hours fault to be rectified within 1 Hour of the start of Normal Working Hours on the following working day.	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
	Exhibitions & Displays	Booking Requirements	• Booking facility available • Exhibition space and services requested are available and provided as booked • Support services such as portering, set up, presentation planning and display production are available and	In the event of any fault which prevents the exhibition. • Urgent Priority: 30 minutes, throughout all the time that the exhibition runs. In the event of any fault that	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month

			as booked	disrupts a manned exhibition. • High Priority: 2 Hours, during Normal Working hours. Outside Working Hours fault to be rectified within 2 Hours of the start of Normal Working Hours on the following working day. In the event of any fault that disrupts an unmanned exhibition. • High Priority: 4 Hours, during Normal Working hours. Outside Working Hours fault to be rectified within 4 Hours of the start of Normal Working Hours on the following working day.	
		Security Control	• Security regulations are fully complied with • Issuance of visitor passes and recording issues and retrievals in line with procedures required by the client	No of compliant random checks / No of random checks per month Performance Tolerance: 10%	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
[2] Overnight Accommodation	Asset Register	Complete Inventories	• The inventory of soft furnishings is complete for duty cabin and resident clerk's accommodation and inventory of crockery is complete for resident clerk's accommodation only	No of compliant random checks / No of random checks per month Performance Tolerance: 10%	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
	Service Quality	Residents' Satisfaction	• Residents are satisfied with the overall condition of the rooms and facilities provided	No of actual surveys / Number of comments received Sample size 100% per month Performance Tolerance: 15%	• Monthly: Measured using data from comment cards/ satisfaction questionnaires
		Incident Control	• No incidence of accommodation preparation outside core working hours • No incidence of duty staff not having	In the event of any H&S risk. • Urgent Priority: 1 Hour, 24 Hours a day, 365 days a year	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers

			requisite accommodation (i.e. accommodation not clean)	In the event of any minor problems with the accommodation or any other fault. • Routine Priority: 4 Hours during Normal Working Hours	and supervisors. 4 random checks per month
		Security Control	• Security regulations are fully complied with • Issuance of both resident and visitor passes and recording issues and retrievals in line with procedures required by the client	No of compliant random checks / No of random checks per month Performance Tolerance: 10%	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
	Laundry Service	Quality Supplies	• Replacement bed linen to be clean, dry, pressed and free of stains, unpleasant odours and holes, and not discoloured • No incidence of bed linen not changed once a week or when there is a change of person, for resident clerk accommodation and every day of the year • No incidence of curtain not free from stains, unpleasant odours and holes • No incidence of bathroom towels not changed once a week or when there is a change of person for resident clerk accommodation and every day of the year • No incidence of replacement bathroom towels not being clean and pressed and free from stains, unpleasant odours and holes	In the event of any H&S risk. • Urgent Priority: 1 Hour, during the time that someone takes occupation of a room, 365 days a year In the event of faults like holes and stains to linen, towels or curtain. • Routine Priority: 24 Hours for 365 days a year	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
		Finished articles	• All finished articles are dry to the touch	No. of compliant articles in sample / No. of articles in sample Sample size: 10% per month Performance tolerance: 5%	• Weekly: Measured and monitored using Departmental Checklist
		Standards	• All finished articles meet the standards of finish specified in the	No. of compliant consignments in sample	• Weekly: Measured and monitored using Departmental

			Service Agreement	No. of consignments in sample Sample size: 10% per month Performance tolerance: 5%	Checklist
ADDITIONAL FOR HEALTHCARE					
[1] Laundry Service	Provision of Linen	Quality Supplies	• Replacement bed linen to be clean, dry, pressed and free of stains, unpleasant odours and holes, and not discoloured • No incidence of bed linen not changed once a week or when there is a change of person, for resident clerk accommodation and every day of the year • No incidence of curtain not free from stains, unpleasant odours and holes • No incidence of bathroom towels not changed once a week or when there is a change of person for resident clerk accommodation and every day of the year • No incidence of replacement bathroom towels not being clean and pressed and free from stains, unpleasant odours and holes	In the event of any H&S risk. • Urgent Priority: 1 Hour, during the time that someone takes occupation of a room, 365 days a year In the event of faults like holes and stains to linen, towels or curtain. • Routine Priority: 24 Hours for 365 days a year	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
	Transport, Collection & Delivery	Approved Transportation	• Dirty and infected articles are transported to a designated area in an approved and safe manner	No. of compliant deliveries in sample / No. of deliveries in sample Sample size: 5% per week Performance tolerance: 5%	• Weekly: Measured using Departmental Checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
		Segregated Articles	• Dirty articles are not transported in the same vehicle/segregated section together with clean articles or any other items	No. of compliant consignments in sample / No. of consignments in sample Sample size: 10% per month Performance tolerance: 5%	• Weekly: Measured using Departmental Checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
		Disinfected Sections	• Following the transport of dirty articles the vehicle or segregated	No. of compliant random checks per month	• Weekly: Measured using Departmental Checklist.

			section is disinfected before use for transportation of clean articles	No. of random checks per month Performance tolerance: 5%	Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
		Delivery System Maintained	• A system of determining, confirming and recording volume delivered to each point is maintained	No. of compliant occasions in sample No. of occasions in sample Representative random sample size	• Weekly: Measured and monitored using Departmental Checklist
		Containers' Preparation	• Clean linen is transported in lined containers. Soiled linen is transported in unlined containers	No. of compliant consignments in sample No. of consignments in sample Sample size: 10% per month. Performance Tolerance: 15%	• Weekly: Measured and monitored using Departmental Checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random
		Return Trolleys	• Empty trolleys are returned to the despatch/collection point	No. of compliant random checks No. of random checks per month Sample size: 5% per week Performance tolerance: 10%	• Weekly: Measured and monitored using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
		Unloading Cleaning	• Containers or cages utilised for used textiles or uniforms are cleansed as appropriate or thoroughly washed with detergent and hot water after unloading	No. of compliant random checks No. of consignments in sample Sample size: 10% per month Performance tolerance: 15%	• Weekly: Measured and monitored using the departmental checklist
		Processed Infected Linen	• All infected linen is processes as detailed in Health Service Guidance and any subsequent updates to this guidance note	No. of compliant occasions in sample No. of occasions in sample Sample size: 10% per month Performance tolerance: 0%	• Weekly: Measured and monitored using Departmental Checklist. Data from appropriate Quality Assurance System
		Sterile Articles	• Articles provided to sterile services are folded and packed according to specified requirements	No. of compliant articles in sample No. of articles in sample Sample size: 10% per month Performance tolerance: 10%	• Weekly: Measured and monitored using the departmental checklist
		Supply Availability	• Sufficient textiles and uniforms are	No. of compliant consignments	• Weekly: Measured and

			available to departments at all times	in sample No. of consignments in sample Sample size: 10% per month. Performance Tolerance: 15%	monitored using departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random
		Collection Timelines	• All dirty textiles and uniforms are collected from wards and departments within 1 hour of agreed times	No. of collections in sample No. of agreed collections in sample Sample size: 5% per week Performance tolerance: 10%	• Weekly: Measured and monitored using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
		Distribution Timeline	• All clean textiles and uniforms are distributed to wards and departments within 30 minutes of scheduled times	No. of collections in sample No. of agreed collections in sample Sample size: 5% per week Performance tolerance: 5%	• Weekly: Measured and monitored using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
		Special Request	• Special collections and deliveries are made upon request to meet the hospital's and client's operational requirements	No of requests complied with No of requests Sample size: 100% per week Performance Tolerance: 10% Service Response Time: 1 hour	• Weekly: Measured and monitored using Helpdesk Log
		Ad-hoc Movements	• Staff undertake ad hoc linen movements within the agreed response time	No. of requests complied within sample No. of requests in sample Sample size: 5% per week Performance Tolerance: 15%	• Monthly: Measured and monitored using Helpdesk Log
	Textiles	Specification & Standard	• All finished textiles to the agreed specification and meet the specific standards of finish	No. of compliant occasions in sample No. of occasions in sample Representative random sample size Rectification time: 1 hour	• Monthly: Measured and monitored using Laundry Quality Assurance System
		Finished Quality	• All textiles or uniforms are processed as detailed as required	No. of compliant occasions in sample	• Monthly: Measured and monitored using Laundry Quality Assurance System

				No. of occasions in sample Representative random sample size	
			• All finished articles are dry to the touch	No. of compliant occasions in sample --- No. of occasions in sample Representative random sample size	• Monthly: Measured and monitored using Laundry Quality Assurance System
	Uniform Stock Control	Articles' Identification	• All articles are identified using the range of markings determined jointly by the client and service provider or supplier	No. of compliant articles in sample --- No. of articles in sample Sample size: 10% per month. Performance Tolerance: 10%	• Monthly: Measured and monitored using Departmental Checklists.
		System Maintained	• A system of determining, confirming and recording articles delivered is maintained throughout	No. of compliant occasions in sample --- No. of occasions in sample Sample size: 20% per month. Performance Tolerance: 10%	• Monthly: Measured and monitored using Departmental Checklists.
		Loss & Damage Control	• Losses and damages to hospital or client owned items are closely monitored and reported, and the hospital reimbursed for any losses attributable to the contractor, where the hospital or client have followed the correct order	• Provision of Monthly Management Report • Pass/Fail if not replaced within 1 month	• Monthly: Measured and monitored by confirmation of compliance form the hospital/ client
	Tailoring Services	Alteration Requirement	• The uniform supply, fitting and alteration service meets requirements. Hemming requests to be completed within 7 days	No. of uniforms supplied, fitted or altered per month --- No. of uniforms that were required to be supplied, fitted or altered per month Representative random sample size Performance Tolerance: 15%	• Monthly: Measured and monitored using the departmental checklist. Data from Sewing Room records
		Client Specifications	• Any manufactured items meet hospital or client specifications	No. of items returned as defective or incorrect --- Total number of manufactured items Representative random sample size	• Monthly: Measured and monitored using Quality Assurance System.

		Articles' Identification	• All articles are appropriately identified using the range of markings determined jointly by the supplier and client	No. of compliant occasions in sample / No. of occasions in sample Sample size: 10% per month Performance Tolerance: 10%	• Monthly: Measured and monitored using Quality Assurance System and the departmental checklist. Data from sewing room records
TECHNICAL	[T25] NURSERY SERVICES				
Parameters	Metrics	Indicators	Attributes	Formula/Target	Monitoring
[1] Service Standard	Supervision Standard	Qualified Staff	• Care staff have an appropriate qualification as required by statutory and local authorities' requirements; in addition there is one qualified teacher on duty	No of compliant inspections per month / No of inspections per month Performance Tolerance: 0%	Monthly: Measured and monitored using monthly inspections and monthly report
		Supervision Ratio	• The ratio of carers to children is 1:3 for children below 2 years • The ratio of carers to children is 1:5 for children over 2 years	No of compliant inspections per month / No of inspections per month Performance Tolerance: 5%	Monthly: Measured and monitored using monthly inspections and monthly report
	Improvement Initiatives	Agreed Recommendations	• Any recommendations from authorities and clients have been implemented within the time scale agreed between the nursery operator and the client	No of compliant random checks / No of random checks per month Performance Tolerance: 10%	• Monthly: Measured and monitored in Monthly Performance Report
[2] Records	Registration	Background Details	• Register of children attending, including any specific requirements they may have and details of their parents or guardians, is present and up-to-date	No of compliant random checks / No of random checks per month Performance Tolerance: 10%	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
		Children's Achievements	• Register of children's achievement with respect to any government curriculum is available and up-to-date	No of compliant random checks / No of random checks per month Performance Tolerance: 10%	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
		Updated Waiting List	• Waiting list is available and updated in accordance with client's guidelines	No of compliant random checks / No of random checks per month Performance Tolerance: 10%	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded

					random checks by managers and supervisors. 4 random checks per month
	Fire Drills	Service Updates	• Register of fire drills is present and up-to-date	No of compliant random checks / No of random checks per month Performance Tolerance: 10%	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
[3] Policies & Procedures	Regulations	Compliance	• Comprehensive set of policies and procedures (including but not limited to health of children, discipline, complaints) is present and up-to-date • Copy of Children's Act is on site • Copy of valid and relevant insurance is displayed	No of compliant random checks / No of random checks per month Performance Tolerance: 10%	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
[4] Health & Safety (H&S)	Provision & Requirements	Qualified Staff	• There is a qualified first aider on site • All staff are fully aware of the fire evacuation procedures	No of compliant inspections per month / No of inspections per month Performance Tolerance: 0%	• Monthly: Measured and monitored using monthly inspections and monthly report
		Escape Routes	• All fire escape routes are free from obstructions	No of compliant random checks / No of random checks per month Performance Tolerance: 10%	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
		Eliminate Risks	• There are no incidents of poor cleanliness, which put the H&S of the children or staff at risk	No of compliant random checks / No of random checks per month Performance Tolerance: 10%	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
[5] Catering	Food Catering	Menu Display	• A weekly menu is posted on the notice board	No of compliant random checks / No of random checks per month Performance Tolerance: 10%	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month

	Kitchen	Hygiene Requirements	• Kitchen area and all food, including storage and preparation, meet the statutory hygiene requirements	No of compliant random checks / No of random checks per month Performance Tolerance: 10%	• Monthly: Measured using the departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month

Section 3: Image

IMAGE	[I1] BUILDING FABRIC & EXTERNAL ASSETS				
Parameters	Metrics	Indicators	Attributes	Formula/Target	Monitoring
[1] Building Fabric & External Assets	Functionality	Fully Functioning	• Items are checked regarding whether they are able to function fully or partly	In the event of defects found which cause significant H&S risk, or security risk, or cause a major reduction in the quality of the working environment (i.e. broken window, major leak in building envelope). • Urgent Priority: Grace Period is 1 Working Day in Core Hour Areas, 12 Hours in 24 Hour Areas In the event of defects which cause a minor H&S risk (i.e. uneven paving slab) or which cause a significant reduction in the quality of the working environment (i.e. minor leak in building envelope). • High Priority: Grace Period is 5 Working Days in Core Hour Areas, 60 Hours in 24 Hour Areas In the event of defects which cause a minor reduction in the quality of the working environment (i.e. missing section of cladding). • Routine Priority: Grace Period is 1 Month	
	Safety		• Items are ensured to be in a safe	In the event of defects found	• Monthly: Measured using the

			condition and in an acceptable appearance (minor defects and blemishes, reasonable appearance permitted, providing appearance has not deteriorated to the extent of needing replacement)	which cause significant H&S risk, or security risk, or cause a major reduction in the quality of the working environment (i.e. broken window, major leak in building envelope). • Urgent Priority: Grace Period is 1 Working Day in Core Hour Areas, 12 Hours in 24 Hour Areas In the event of defects, which cause a minor H&S, risk (i.e. uneven paving slab) or which cause a significant reduction in the quality of the working environment (i.e. minor leak in building envelope). • High Priority: Grace Period is 5 Working Days in Core Hour Areas, 60 Hours in 24 Hour Areas In the event of defects which cause a minor reduction in the quality of the working environment (i.e. missing section of cladding). • Routine Priority: Grace Period is 1 Month	departmental checklist. Monitored by regular, recorded random checks by managers and supervisors. 4 random checks per month
[2] Maintenance of Building Elements	Building Frame	Structural Frame	• No rusting causing a serious weakening of the structure, no spalling of concrete • No defects found due to structural weakness of frame	No of compliant inspections per month --- No of inspections per month Performance Tolerance: 0%	• Monthly: Measured and monitored using departmental checklist and monthly report
	Flat roofs, copper roofs	Roof tiles or slates	• No missing tiles or slates which are resulting in water ingress into building interior	No of compliant inspections per month	• Monthly: Measured and monitored using departmental checklist and monthly report

			• No immediate H&S risk i.e. risk of falling materials likely to cause injury	No of inspections per month Performance Tolerance: 0%	
		Roof Leadwork	• Roof leadwork adequately fixed i.e. water ingress into building interior avoided	No of compliant inspections per month No of inspections per month Performance Tolerance: 0%	• Monthly: Measured and monitored using departmental checklist and monthly report
		Roof Tiles' Membranes	• No known tears or visible tears resulting in water ingress into building interior	No of compliant inspections per month No of inspections per month Performance Tolerance: 0%	• Monthly: Measured and monitored using departmental checklist and monthly report
	External Walls	• Stonework, Brickwork • Cladding	• No missing materials resulting in water ingress into building interior • No immediate H&S risk i.e. risk of falling materials likely to cause injury	No of compliant inspections per month No of inspections per month Performance Tolerance: 0%	• Monthly: Measured and monitored using departmental checklist and monthly report
	Windows	Windows' Sealant	• No missing seals or damaged sealant resulting in water damaging building interior, and no broken glass • No immediate H&S risk i.e. risk of falling materials likely to cause injury	No of compliant inspections per month No of inspections per month Performance Tolerance: 0%	• Monthly: Measured and monitored using departmental checklist and monthly report
	Disposal Installations	• Rainwater down pipes • Rainwater gutters	• Gutter or downpipe to discharge as designed and no leaks causing ingress of water into building or onto public • All are adequately secured to wall structure so as to not constitute an immediate H&S risk	No of compliant inspections per month No of inspections per month Performance Tolerance: 0%	• Monthly: Measured and monitored using departmental checklist and monthly report
	External Works	• Railings • Pavements • Walls (support walls to railings or boundary walls)	• No missing rails or uprights i.e. security integrity maintained • All are structurally secured	No of compliant inspections per month No of inspections per month Performance Tolerance: 0%	• Monthly: Measured and monitored using departmental checklist and monthly report